Briefing

The carbon footprint of crops grown on English peatlands

June 2023

green alliance...

Summary

The carbon footprints of crops grown on lowland peat in England are at least six times higher than soya exported from the Cerrado and Amazon regions of Brazil.

Background

For some time, food imported from recently deforested areas of the world has caused concern. In 2006, global soya traders agreed to stop buying from newly deforested areas of the Brazilian Amazon following pressure from activists, consumers and retailers, such as Tesco and McDonald's.

In 2021, the UK government said that protecting the Amazon was a priority for the UK. In 2020, the UK government set out its self-declared "world leading" programme to protect rainforests. In 2019, the prime minister announced new funding to tackle deforestation in Brazil.

But there has been far less concern about food grown on England's lowland peatlands. To be suitable for agriculture, lowland peatlands are drained. When drained, the land emits four times more carbon than the same area of English woodland can sequester each year.

The UK's agriculture and land use sector is further behind in meeting its climate commitments than any other sector. Rewetting all lowland arable peat in England could deliver 36 per cent of the emissions reductions needed from the UK agriculture and land use sector to meet the 2030 target set under the Paris Agreement.

Relative to the UK's land area, this is a very small amount of land use change: lowland arable peat in England accounts for just one per cent of UK farmland. Despite this, the government has done little to progress rewetting lowland peat besides recently establishing a new option in the Countryside Stewardship Scheme to pay for peat rewetting at a rate of £537 per hectare per year. But this payment rate does not reflect the huge climate change mitigation potential of rewetted lowland peat and is out of step with the

rewards for other land use change options, like creating grass strips in arable fields which, although less effective at reducing emissions, receives £658 per hectare per year.

Analysis

For context we compared the carbon footprint of a range of English crops with soya exports from Brazil. For every unit of protein, the carbon footprints of wheat, barley and peas grown on lowland English peat are 16 times, 18 times and 13 times greater respectively than soya exports from the Amazon region of Brazil. When assessed per calorie, wheat and barley have seven times the carbon footprint and peas have a ten times larger carbon footprint than soya from the Brazilian Amazon.

The soya moratorium, which committed global buyers to stop sourcing it from newly deforested areas of the Amazon, has successfully lowered deforestation. The carbon footprint of soya from the Amazon would probably be higher without it. Campaigns have so far unsuccessfully called for the moratorium to apply to Brazil's Cerrado region which has seen production go up partly due to restrictions in the Amazon. Per calorie, the carbon footprints of wheat and barley grown on lowland arable peat are six times greater than soya from the Cerrado, while English peatland grown peas are nine times greater than soya exported from the Cerrado.

For more information, contact
Lydia Collas, policy analyst
lcollas@green-alliance.org.uk

Methodology

We took the carbon footprints of Brazilian soya exports from Escobar, et al (2020).

We then estimated the land use change emissions on lowland arable peat using Evans, et al (2022). To convert this to an estimate per unit of product, we divided by the yields of peas, wheat and barley grown on lowland peat. Given that lowland peat is some of the most productive land in England, we took wheat and barley yields from the 2019-20 Farm Business Survey for 'high performers' which are the 25 per cent most profitable farms. We took the maximum recorded pea yield from a report by Agri-Tech East.

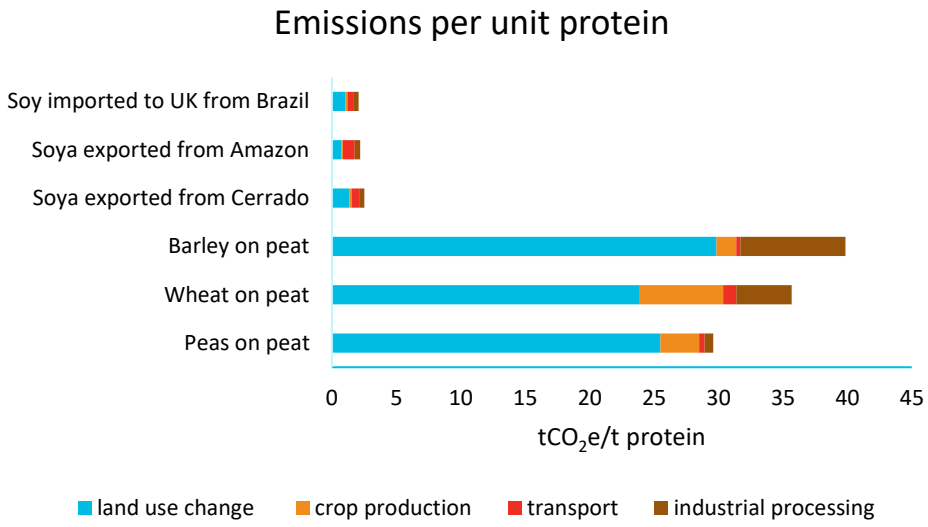
We then estimated emissions associated with on-farm production, transport, processing and packaging of wheat, barley and peas on lowland arable peat using *Our world in data*. While this dataset is based on global averages, the carbon footprints of crops produced on lowland peat are dominated by emissions associated with land use change, for which we used estimates specific to England. Variations in the other sources of emissions would not change our conclusions. We combined these other sources with estimates of the emissions from land use change to estimate the total carbon footprints of wheat, barley and peas grown on lowland peat.

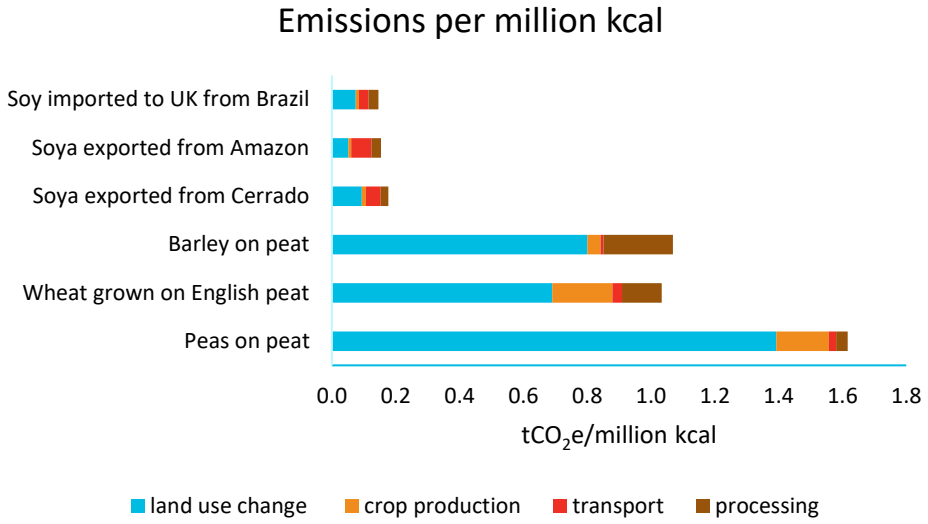
Since protein and energy content of crops varies, we converted estimates of the carbon footprint per tonne of product to estimates per tonne of protein and per thousand kilocalories. To do so, we used the protein and energy content of soya, peas, wheat and barley given by Feedipedia.

Note on this comparison

We have demonstrated that the considerable concern around Brazilian soya imports is also applicable to food produced on England's lowland peat. Sustained high levels of emissions from cropped lowland peat are exceptional. But deforesting a hectare of the Amazon to clear the way for soya production would result in higher carbon emissions in that year than continuing to crop the equivalent area of lowland arable peat. However, in the following years, the emissions associated with Amazonian soya are far exceeded by the emissions from lowland arable peat. The data we use covers soya exports from 2010-15, with emissions from deforestation included if it occurred in or after 2008.

This multi-year timeframe, combined with the fact that only a fraction of soya exported from the Amazon and Cerrado in that time was grown on land deforested since 2008, meant Brazilian soya's carbon footprint was lower than crops grown on England's peatlands.


Emissions per unit protein
Soy imported to UK from Brazil
Soya exported from Amazon
Soya exported from Cerrado
Barley on peat
Wheat on peat
Peas on peat
0
5
10
15
20
25
30
35
40
45
tCO2e/t protein
land use change
crop production
transport
industrial processing


Emissions per million kcal
Soy imported to UK from Brazil
Soya exported from Amazon
Soya exported from Cerrado
Barley on peat
Wheat grown on English peat
Peas on peat
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
tCO2e/million kcal
land use change
crop production
transport
processing