

Climate crisis threatens truffle production but could put UK species back on the menu

March 16 2023, by Paul W Thomas



Credit: AI-generated image ([disclaimer](#))

[Truffles](#), the prized fungi coveted worldwide by chefs and food connoisseurs, have long been held in high regard.

Often associated with Mediterranean Europe, especially France, Italy and Spain, these tasty fungi grow underground and are unearthed with

the help of scent-detection dogs.

But unbeknown to many is the fact that the UK once had a thriving industry focused on a native truffle species (*Tuber aestivum*), with the English truffle first [recorded](#) in 1693.

From this point on there are many accounts of the UK's thriving truffle industry, including [writings](#) by celebrated chef [Mrs. Beeton](#) in 1861. However, changing socioeconomic conditions and a loss of habitat eventually led to a collapse of the industry, and truffle harvesting in the UK went to ground.

Some hunters were still able to find [truffles](#). This was mainly for personal use, but some were still sold to local restaurants or pubs by lucky hunters—though only on a very small scale. Official markets had disappeared.

This slump wasn't unique to the UK. A similar story played out in France, although the French had enough crops to keep the industry alive. The decline was eventually stemmed in France in the 1970s thanks to a new technique, whereby truffles were cultivated by inoculating the roots of oak and hazel trees with truffle spores.

News of this success spread to the UK, where truffle-inoculated trees from the Mediterranean began to be imported. But applying methods that worked in the Mediterranean to the UK's temperate climate failed to produce any truffles.

This changed when my colleagues and I pioneered a new approach that took into account the UK climate. Rather than replicating Mediterranean methods, we instead focused on seeds and spores adapted to local conditions. This led to the harvest of England's first cultivated truffle, in Leicestershire in [2015](#).

This was swiftly followed by Wales' first cultivated truffle in [2016](#) and Scotland in [2017](#). And just across the water, the Republic of Ireland joined the group of Celtic truffle producers when two orchards [began production](#) in 2022.

This revival of the British and Irish truffle industries is particularly encouraging given my [recent research](#) shows that [global production](#) is at risk due to the climate crisis. But my work also suggests that UK truffles may be set to prosper in these conditions.

Truffles at risk?

Myself and a colleague have used [historical data](#) to anticipate the [impact of climate change](#) on truffle production. Our data suggests there will likely be a huge decline in Mediterranean harvests by 2071.

We are now starting to see evidence of this, with poor harvests linked to drier conditions. But what we hadn't anticipated was the impact closer to home—with 2022 the worst UK truffle season in memory.

Although we are not yet sure exactly why this is the case, [summer drought and heat](#) can be detrimental to truffle harvests. And we saw this in the south and east of England, with high temperatures, little rainfall and reduced truffle production.

But in the north and west of England, where rainfall is typically higher and temperatures are cooler, the impact on truffle production was very different—with truffles harvested in record quantities.

Not many wild truffles exist in the north and west of England, as the soil isn't as suitable. Truffles like calcareous bedrock, such as chalk or limestone, which results in alkaline soil. So the truffle orchards in these areas have had to make the soil more alkaline by applying agricultural

lime.

Climate changing

Perhaps then 2022 presents a good example of what we can expect, in terms of truffles in the UK as [climate change](#) advances.

Wild production will struggle but orchards in the south and east of England could use irrigation to sustain harvests. Meanwhile, orchards in the centre, north and west of England may be far more resilient. However, offsetting the expected decline in Mediterranean production will be almost impossible.

But while climate most certainly impacts the growth and development of truffles, it may also be important in terms of [reproduction](#). Indeed, truffle fungi require two different truffle "mating types", akin to males and females in humans, to come into contact to produce the actual fruiting bodies, much like pollination in fruit crops.

Although we are not totally sure how this happens, more and more [evidence](#) indicates that invertebrates—such as the humble woodlouse—may help by eating small amounts of truffle and then moving spores (and the different mating types) which are then deposited in their fecal matter.

Crucially, in warmer and dryer conditions these invertebrates reduce feeding and movement, which results in fewer spores and mating types being moved around. So this is yet another way truffle production is negatively impacted by hotter and dryer conditions.

But climate change has also led to some unexpected benefits, too. In 2017, [Périgord truffles](#) (*Tuber melanosporum*) which are native to southern Europe and some of the most expensive truffles in the world,

were grown for the first [time in Wales](#).

This was possible due to the change in climate that has already occurred since the onset of the industrial revolution. Temperatures have increased just enough to allow this species to fruit.

Advancing [climate](#) change is a huge global problem, but in terms of truffles in the UK, it can be viewed as both a threat and an opportunity. Either way, Mrs. Beeton would likely be happy to see the local [truffle](#) industry finally unearthed, once more.

This article is republished from [The Conversation](#) under a Creative Commons license. Read the [original article](#).

Provided by The Conversation

Citation: Climate crisis threatens truffle production but could put UK species back on the menu (2023, March 16) retrieved 18 July 2024 from <https://phys.org/news/2023-03-climate-crisis-threatens-truffle-production.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.