



SUPPORTING MORE SUSTAINABLE VEGETABLE PRODUCTION ON LOWLAND PEAT: RETAILER RECOMMENDATIONS

WWF-UK & Fenland SOIL

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INTRODUCTION

Lowland peat soils are among the UK's most productive yet environmentally vulnerable agricultural landscapes. Drained for intensive farming, these soils are responsible for the highest carbon emissions per unit area of any other land use in the UK. Their degradation poses risks to climate and biodiversity as well as the long-term viability of food production on peat soils. As key players in the UK food system, retailers are uniquely positioned to shift the dial on sustainable supply chains. By supporting farmers to better map their peat soils and adopt more sustainable farming methods tailored to these drained peat soils, retailers can reduce supply chain emissions, protect natural capital, and secure long-term farm viability. This document outlines recommendations tailored to UK food retailers to help put principles for more sustainable lowland peat farming into practice.

THE TRIPLE CHALLENGE ASSOCIATED WITH FARMING ON LOWLAND PEAT

UK lowland drained peatlands, such as those found in the Fens of East Anglia and parts of Lancashire and Yorkshire, represent some of the most fertile and intensively farmed landscapes in the country. These areas have been drained over centuries to support high-value agricultural production, including the production of salad crops, root vegetables (such as carrots and onions), and potatoes. The combination of deep, organic-rich soils and intensive land use has made these regions central to the UK's fresh produce sector. The East Anglian Fens alone support approximately 40% of the nation's vegetable production.¹

However, drainage coupled with intensive agricultural practices have resulted in the rapid oxidation of organic soils, leading to high greenhouse gas (GHG) emissions from the peat as it decomposes, soil subsidence, and biodiversity loss. In England, 85% of total peatland GHG emissions originate from lowland peatlands that have been drained for agriculture.² Vegetable production on drained lowland peat presents a particularly acute 'triple challenge' – with the need to balance climate mitigation, food security, and environmental stewardship. While fully rewetting peat is the most effective intervention for halting carbon (C) loss and restoring peat integrity, its feasibility needs to be carefully considered at landscape scale and a mosaic land use approach is most likely to be needed.² With nearly half of

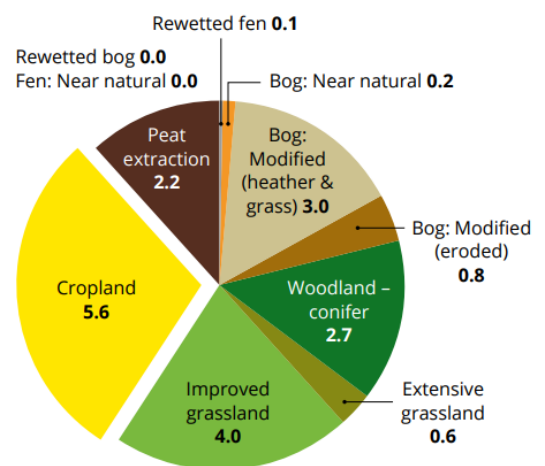


Figure 1 – UK peat GHG emissions by type in 2021 (Mt CO₂e yr⁻¹) – Using the AR5 global warming potential of methane and nitrous oxide. Data extracted from GHG emissions inventory.

fresh vegetables and 85% of fruit already imported,³ displacing production from lowland peat could increase the UK's reliance on imports and offshore environmental impacts to regions already facing water and soil stress. To maintain the UK's capacity for domestic vegetable production, it is likely that drained peatland landscapes will continue to produce some vegetable crops.

It is in this context that WWF-UK and Fenland SOIL have partnered to co-develop principles for sustainable lowland peat farming. The principles and recommendations presented here were developed following a discussion session with over 150 attendees at the Fenland Soil conference (2025), then refined by a panel of agronomists, scientists and farmers and were further tested with a focus group of farmers from drained lowland peat areas.⁴ The emerging farming principles must not distract us from the fact that around 31% of the UK's lowland peatlands will need to be fully re-restored by 2040 to meet national climate targets.⁵ However, where full restoration is not feasible, adapting farming systems to protect peat soils can play a vital role in slowing degradation and reducing emissions while continuing food production.

PRINCIPLES FOR MORE SUSTAINABLE CROPPED FARMING ON DRAINED LOWLAND PEAT

A more sustainable farming on lowland peat must serve three key outcomes: **reducing carbon emissions while enhancing biodiversity and sustaining productivity**. WWF worked with a panel of farmers, agronomists and academics to consider how principles for regenerative farming on mineral soils might apply in a lowland peat context. Five core principles emerge:

1. Proactive water management
2. Protecting the soil surface
3. Diversity in space and time
4. Evidence-based cultivation
5. Targeted inputs

Each of the principles contributes to the key outcomes to varying degrees and in different ways and can be put into practice using a variety of farming practices discussed in detail below.⁶ Although the framework can be adapted to suit different local contexts, it is important to understand that all five principles are connected. To make cropping on peat more sustainable, actions should aim to achieve all the outcomes together, not just focus on one or two.

Principles for more sustainable cropped farming on drained lowland peat

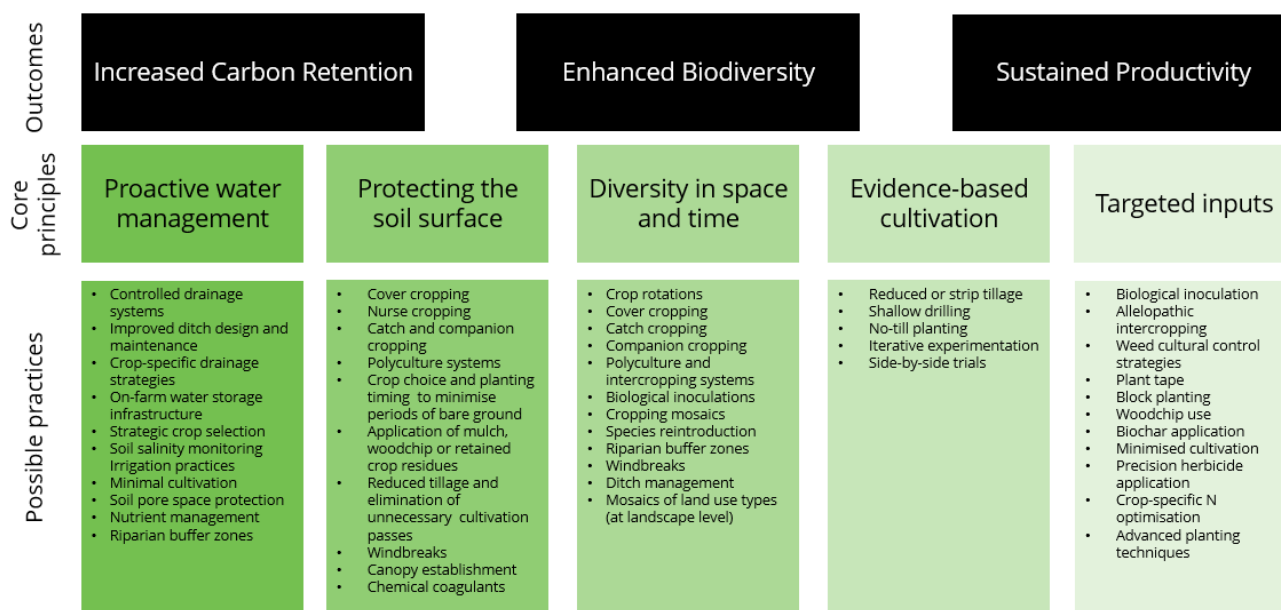


Figure 2: Principles for Sustainable Lowland Peat Farming, highlighting the 3 major outcomes, the associated 5 principles, and an array of practices grouped by principle.

WHAT RETAILERS SHOULD DO TO SUPPORT FARMERS' TRANSITION TO MORE SUSTAINABLE PEAT MANAGEMENT IN THEIR SUPPLY CHAINS

Food retailers, who are the main UK buyer of vegetables grown on lowland peat, are in a unique position to drive and support the transition to more sustainable farming on lowland peat. Supporting farmers through this transition is not just imperative to reduce retailers' scope 3 emissions and nature impacts. Failing to do so would pose a serious risk to a stable and high-quality supply of UK-grown vegetables in the long-run. Studies in drained fenlands used for arable crops in England have found long term subsidence rates in the region of 1.5 cm per year.^{7,8,9} Under the current farming regime, the peat will continue to deplete gradually until it loses its fertility and capacity to deliver high-yielding vegetable crops without increased inputs.

Drawing from interviews with farmers together with WWF's experience in driving change through the retail sector, this section lays out how retailers can enable the adoption of more sustainable cropping on peat in their supply chains. Since many retailers source from the same suppliers, collaboration between retailers on peat is key to ensure an effective response to the peat issue.

1. IMPROVE PEATLAND MAPPING IN SUPPLY CHAINS

Engaging with suppliers to understand where supply chains are exposed to lowland peat is the first step for retailers. In a second step, retailers should support farmers (via organisations like Fenland SOIL) to undertake opportunity mapping to creating a shared understanding of the baseline and creating a mosaic of options for changing land-use or land management.¹⁰ This would enable suppliers to explore wetter farming for some crops, while moving others which are equally suited to cultivation on mineral soils away from peat.¹¹ Recording location and soil type, as well as details about the farming techniques employed would in turn enable retailers to quantify the GHG benefit of mitigation measures such as higher water level management.

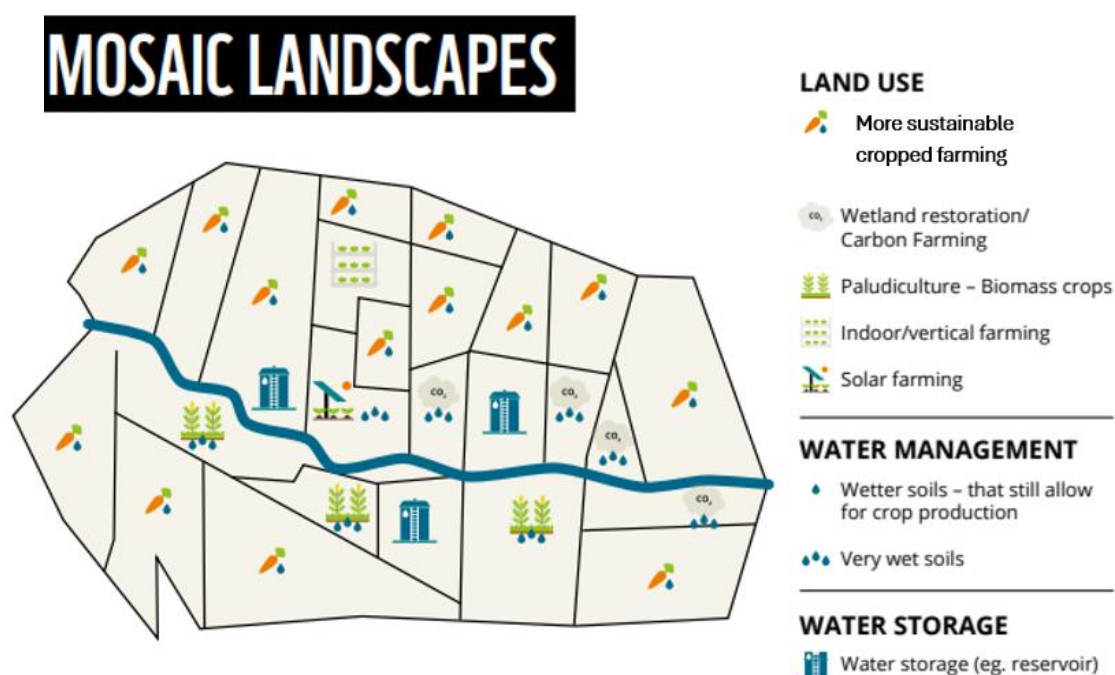


Figure 3: What more sustainable farming on lowland peat might look like across a

2. OFFER MULTI-YEAR CONTRACTS TO GROWERS IMPLEMENTING SUSTAINABLE PEAT FARMING PRACTICES

Transitioning to sustainable practices can require significant upfront investment, ongoing management changes, and a willingness to trial new techniques. Farmers need clear signals that the market will reward these efforts over the long term. Without commercial security and support, the risk of switching practices may be too high, especially for smaller or tenant-operated farms. Secure, longer-term supply agreements (e.g. 3-5 years) with producers adopting sustainable practices provide market certainty and encourage long-term thinking and planning at the farm level.

3. HELP BUILD THE EVIDENCE BASE ON WHAT WORKS

There are still significant knowledge gaps around crop selection, agronomic practices, yield stability, and post-harvest processing. Investment is needed to build an evidence base, de-risk experimentation, and demonstrate viable alternatives to high-drainage farming systems.

- Partner with academic institutions and farmer networks: Engage with organisations already leading on sustainable farming and soil innovation in drained lowland peat landscapes to co-design pilot projects. These partnerships can leverage scientific rigour, on-farm knowledge, and policy insights to test rewetting-compatible techniques under real-world conditions. They also help build farmer trust and identify locally adapted solutions.
- Sponsor trials across farms and host innovation showcases, field days, and open-farm events for peer-learning: Building the evidence base on what techniques work in different contexts is essential to inform farmers' adoption of different practices. Quantifying the effects of different methods enables farmers to make sensible management decisions. Partnering with regional farm clusters can enable peer-to-peer learning.
- Fund R&D into alternative crops and low-drainage systems suitable for UK lowland peat conditions
Support applied research into crops that can thrive under wetter conditions – such as water-tolerant fruits and vegetables – and into cultivation systems that maintain higher water tables. This includes innovation in machinery, seed varieties, and farming techniques. Collaborating with existing research programmes can maximise impact and reduce duplication.¹²

4. REDUCE WASTAGE IN SUPPLY CHAINS

At present, supermarket contracts typically require suppliers to guarantee a certain level of supply. This can lead to overproduction; for example, lettuce producers have to be able to meet weather-dependent peaks in consumer demand ('barbecue weekends') that are impossible to predict in advance, requiring them to plant up a larger area and discard crops that reach harvestable age when demand is lower. This effectively means that large areas of lowland peat are being drained and cultivated, and generating high GHG emissions, all to produce food that ultimately is going to waste. Reducing this level of overproduction would require the supermarket sector to accept that demand may outstrip supply at some peak times, which may be unpalatable to consumers. However, experiences during Covid-19 and subsequent challenges in global supply chains may have led to greater public acceptance that retailers may not be able to provide

everything all the time. If the supermarket sector as a whole were to demand less stringent guarantees from suppliers this could have the effect of substantially reducing overall food waste, land demand and resulting emissions, and could also free up some existing cropland on peat for the implementation of emissions reduction or carbon sequestration measures.

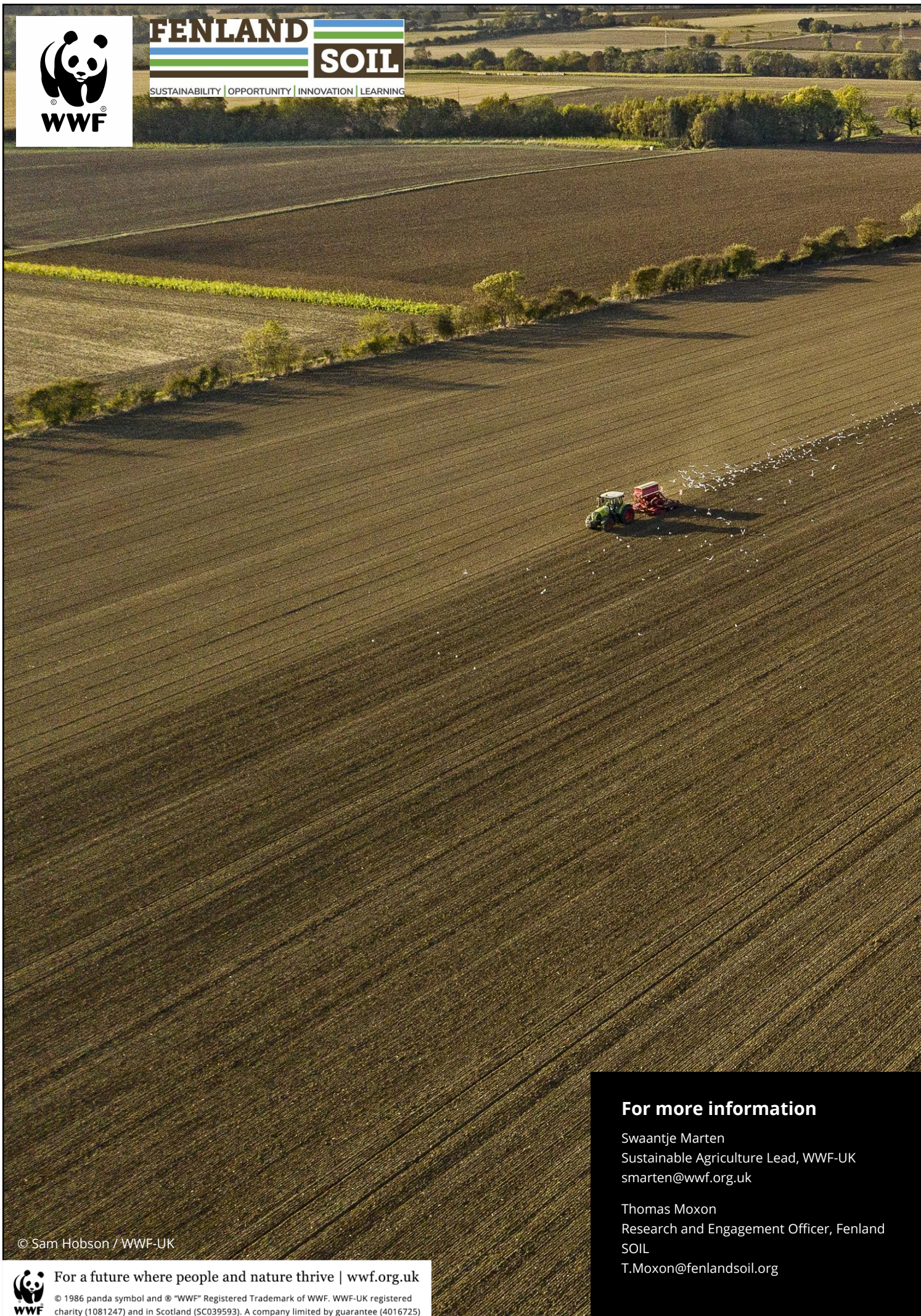
All year-round supply of produce through increased imports and heated greenhouses has shifted seasonal consumer behaviours. Marketing and selling surplus produce during periods where supply outweighs demand (e.g., due to weather conditions) could shift consumer behaviour, reduce emissions, and reduce waste. When supply outweighs demand crop prices do crash, supermarkets should take responsibility for this risk to avoid farms from ploughing produce back into the soil because it is no longer cost-effective to harvest.

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- ⁴ A comprehensive literature review that formed the basis of this paper and a discussion paper 'Principles for more sustainable cropped farming on drained lowland peat' will be available at: <https://www.wwf.org.uk/wwf-basket/agriculture#resource-bank> and fenlandsoil.org/. A Soil Health Guide for farming on lowland peat will be available at: <https://agriculture.co.uk/>.
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- ¹¹ This includes potatoes, cereals, or sugar beet.
- ¹² See for instance: <https://www.paludiculture.org.uk/>



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