

The Food
Foundation

Diets & Regenerative Agriculture: Can Regenerative Agriculture support food security and diet goals?

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Introduction

Currently, in many high-income countries like the UK, food environments are heavily skewed towards unhealthy foods. Dietary inequalities are rife, and healthier, more sustainable food is inaccessible to many. Availability and price are major barriers, with healthier foods costing twice as much as unhealthy foods per calorie (The Food Foundation, 2025a). Marketing and promotions tend to push people towards unhealthy choices, with fast-food outlets dominating high streets, particularly in more deprived areas. The UK's national food security is also facing challenging headwinds, with adverse weather and climate events posing an increasing threat to both British farmers and many of the countries we rely on for imports.

Regenerative Agriculture (Regen Ag) aims to generate farming systems that yield environmental benefits. Its core approach is founded on applying five (sometimes six) key principles to improve soil health that include: keeping the soil covered, using cover crops for continuous root activity, crop diversity, minimal soil disturbance and crop-livestock integration (see Figure 1). Benefits from practicing Regen Ag sometimes claimed include soil carbon sequestration and enhanced biodiversity. Beyond these, greater resilience, reduced carbon emissions (due to fewer chemical inputs), higher profit margins and better work-life balance for the farmers are other outcomes claimed to be associated with Regen Ag. For others, the benefits go beyond the farm

gate and include enhanced nutritional value in crops and animal products produced from regenerative systems (see Figure 2), as well as more social benefits.

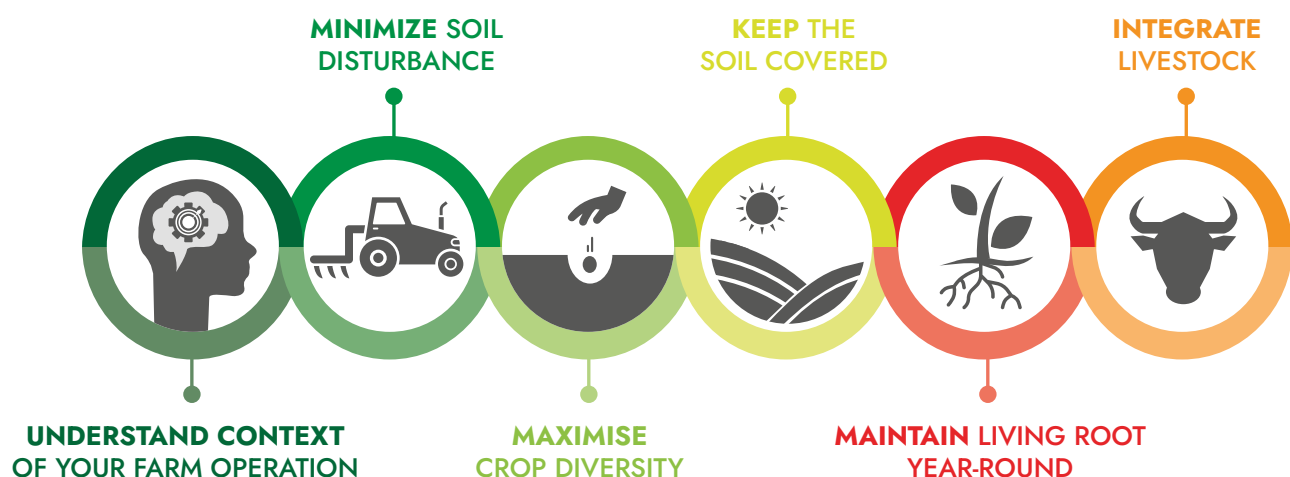
Although there is some consensus around the key principles, there is no fully agreed, formal definition of Regen Ag. Different stakeholders — with various sets of goals and agendas — emphasise different potential benefits, and they often have differing views on the role Regen Ag can play in meeting the diverse objectives associated with it.



These different visions of Regen Ag mean that while for some, Regen Ag is simply a more sustainable way of farming and a set of on-farm production practices, while for others, it's a movement, entailing a change in mindset. For them, Regen Ag offers the potential to shift both production and consumption practices towards a new model, supporting a paradigm shift in food systems and a just transition towards healthier and more sustainable, diverse diets and enhanced food security (Cusworth & Garnett, 2023).

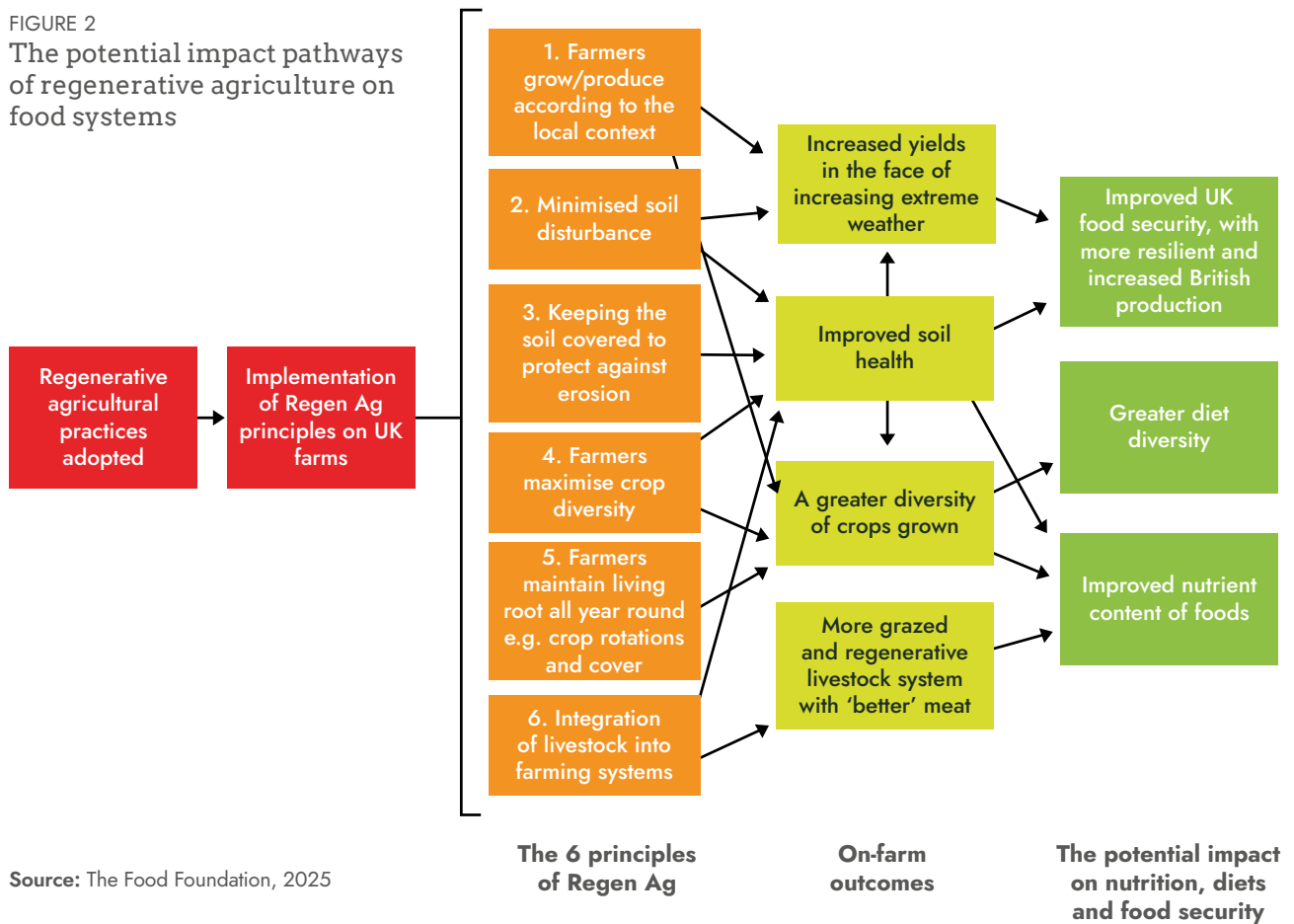
This briefing explores some of these claims, asking whether a food system based on Regen Ag could help enable healthier (and more sustainable) diets for citizens, as well as improved food security. How might 'regenerative' production of food also lead to better consumption and dietary outcomes?

FIGURE 1
The six principles of regenerative farming



Source: Unknown

FIGURE 2
The potential impact pathways of regenerative agriculture on food systems



Reckoning with Regeneration: Agile research sprint by TABLE

This briefing is based on insights from TABLE's "[Reckoning with Regeneration](#)" project, a research initiative which aims to provide a comprehensive, qualitative analysis of definitions, roles and potential of Regen Ag in the UK, enabling policymakers and other stakeholders to navigate this complex and evolving topic.

By collaborating with a wide variety of stakeholders in developing a picture of Regen Ag and its implications, it unpacks perspectives, motives, and assumptions around its potential to meet food system goals (around biodiversity, climate change, nutrition, diets, public health and equity) in order to support informed policy and stakeholder choices.

TABLE's insights were gathered via the following methods:

- a detailed survey with around 300 respondents
- a literature review
- a scenarios workshop
- interviews with over 30 different stakeholders
- regular engagement sessions with a core stakeholder group of around 20 organisations which included farmers, NGOs, academics and businesses from along the supply chain, convened to learn from their experiences, identify areas of consensus and disagreement in relation to Regen Ag.

How do people think about Regen Ag in connection with nutrition, dietary diversity and food security?

Regen Ag discussion is often farm or production focused, but people make various connections to eating, diets and health in the way they think and talk about Regen Ag. Here we explore perspectives gathered during the Agile sprint project on the following narratives connected to Regen Ag and nutrition, diet diversity and food security. These prevailing opinions clarify and help identify areas where stakeholders might be relying too much on limited evidence or making assumptions, and to where further research may be useful. In the following section we examine the evidence base for these three prevailing narratives.

1. NUTRITION AND NUTRIENT DENSITY

THE HYPOTHESIS: improvements in soil health lead to improvements in the nutrient content of Regen Ag-produced foods, in turn impacting on health outcomes.

Both the interviews and the survey found that confidence was relatively low in the evidence supporting the impact of Regen Ag principles on nutrient content of a product. Insufficient evidence was one of the rationales, with 37% of the survey participants selecting this view. A quarter of participants thought food produced by Regen Ag techniques were 'reliably more nutrient dense', and just under a quarter (23%) answered 'sometimes more nutrient dense'. It was generally agreed that even if there were an impact, the benefits may well not survive the processing of Regen Ag-grown crops into commercial food products.

Where there was confidence about Regen Ag's impact on nutrient density, this was often expressed in relation to meat, for example, in reference to studies which find more sustainably produced meat has a relatively higher omega fatty acid content. Additionally, given that meat can reach consumers in a relatively unprocessed form, the risk of nutrient losses through processing was seen as being lessened. 'One health'¹ perspectives resonated with many of those expressing this view who supported the importance of natural environments for animals. One stakeholder felt there was a connection to health, but this was through a reduction of inputs and the consequent reduction of risk to consumers from agrochemical residues in food and antibiotic resistance.

2. DIETARY DIVERSITY AND CHANGING DIETS

THE HYPOTHESIS: Regen Ag approaches lead to greater crop diversity and livestock integration, contributing to a shift in the proportions and types of foods eaten, supporting diets that are more closely aligned to recommended dietary patterns (more fruit and veg and beans, less processed meat and foods high in salt, sugar and fat etc).



Just over a quarter (27%) of participants thought a widespread transition to Regen Ag would lead to people eating more healthy produce. 22% of participants thought a Regen Ag transition could only happen if there is first a shift in consumer demand and in typical dietary patterns. This demonstrates differences in thinking about the mechanisms and causality of behaviour change between those who see production shifts (supply) as driving changes in consumption, and those who think consumption (demand) is the key driver of production.

In terms of **how** stakeholders thought diets would change, Figure 3 shows that most survey participants thought a widespread shift to Regen Ag in UK farming would result in less meat, with the categories most impacted being poultry

¹ One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes that the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent.

meat and pork. 37% of participants also thought it would result in a reduction in sugar beet production. In terms of how more Regen Ag might shift the types of food being produced in the UK, Figure 4 shows that 68% participants thought it would result in more edible legumes like beans and pulses being produced, and the second most selected category was more vegetables (45%).

Despite this argued potential, some stakeholders thought Regen Ag would be unlikely to have an impact on what is produced, as Regen Ag production would likely be taken up in ways that meet the requirements of the status quo. Meat, wheat and dairy are currently the UK's largest agricultural output (Defra, 2025), and so existing supply chain priorities were thought to be likely to be maintained at their current levels. A quarter of participants thought a transition to Regen Ag practices might not lead to any change in diets if there was a concurrent shift towards increased imports, or the processing and formulation of sustainably produced ingredients into processed foods would counterbalance any change in agricultural output.

3. FOOD SECURITY

THE HYPOTHESIS: Regen Ag practices such as enhancing soil health lead to better food security by improving resilience to extreme weather events and reducing our reliance on imports.

The survey found that roughly half of participants did not think that Regen Ag has a predictable relationship with trade, with the remaining participants equally split between the opinion that a widespread transition to Regen Ag would increase or reduce exports and increase or reduce imports.

The interviews found that many believed changes in production and consumption would require proactive divestment from the current production mix and wouldn't happen simply by more farmers adopting regenerative practices. For example, any positive differences in the type of foods being produced in the UK might simply be absorbed or offset by changes in UK imports and exports.

FIGURE 3

Survey answers to the question - If there was a widespread shift to Regen Ag in UK farming, what do you think the UK would be likely to produce LESS of? Select as many as apply.

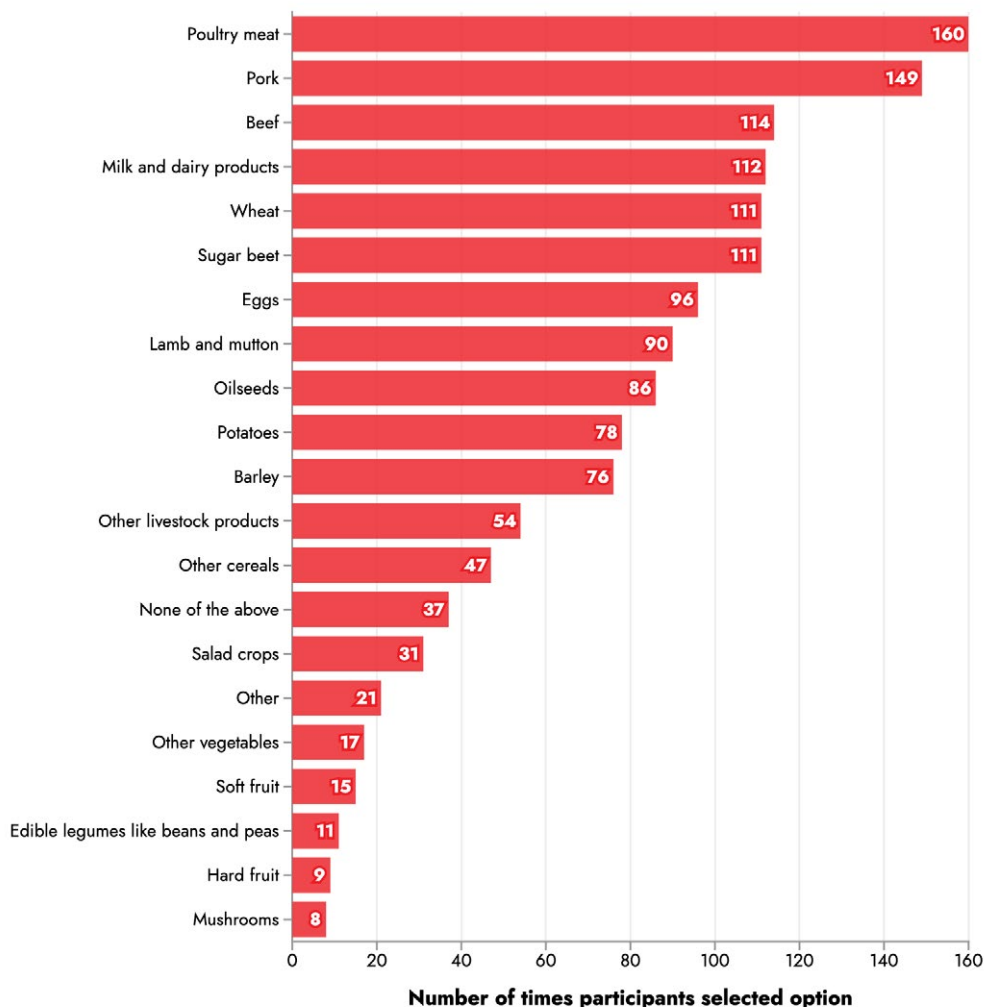
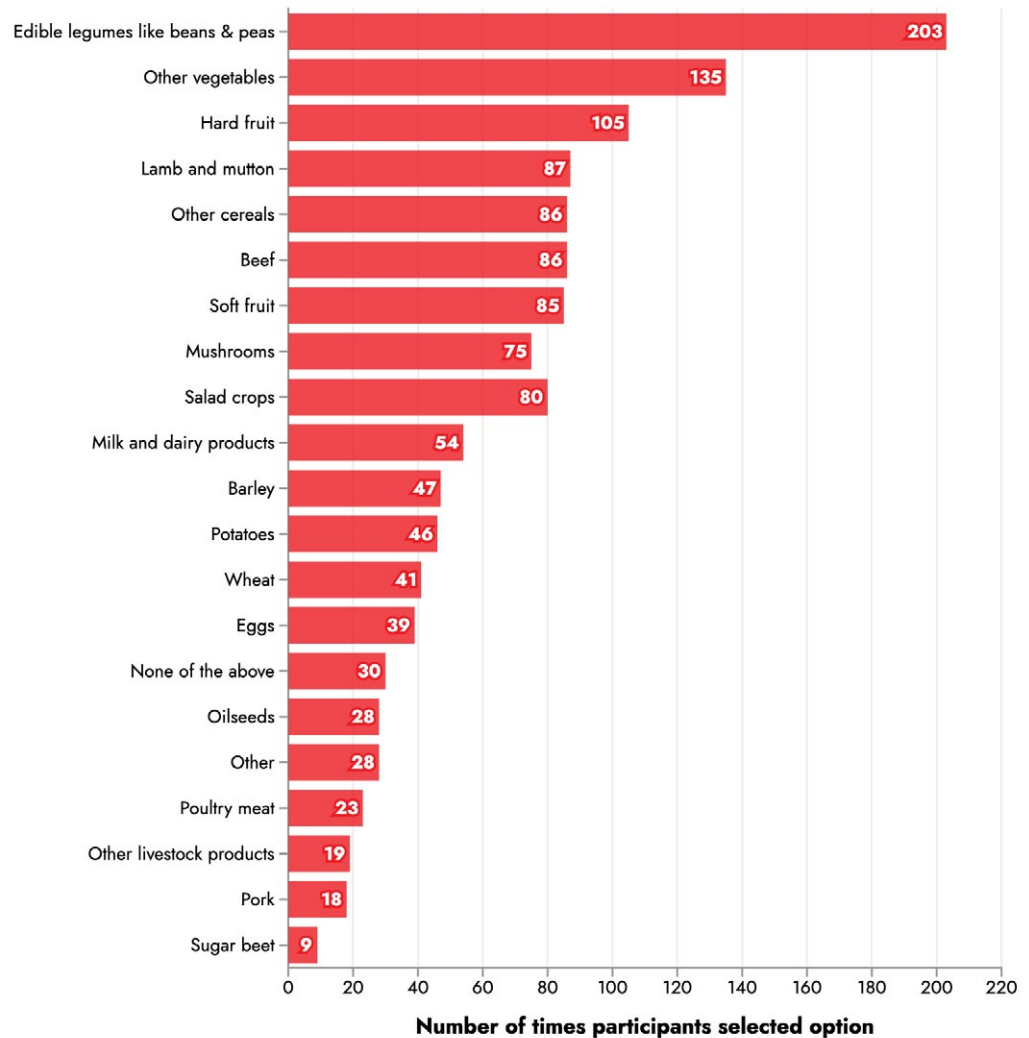


FIGURE 4
Survey answers
to the question
- If there was a
widespread shift
to Regen Ag in UK
farming, what do
you think the UK
would be likely to
produce MORE of?
Select as many as
apply.



What does the evidence tell us about Regen Ag's connection with nutrition, dietary diversity and food security outcomes?

It should be highlighted that the emerging evidence on Regen Ag is relatively new, and the evidence base will build as the base of Regen Ag practitioners expands. There is stronger preliminary evidence demonstrating the impacts of each principle of Regen Ag and its associated practices on environmental outcomes (such as improved soil health and enhanced biodiversity) than there is for nutrition, dietary diversity and associated health outcomes. In this section we compare the views held by project stakeholders to the existing evidence.

1. NUTRIENT DENSITY AND NUTRITION

Sustainable production and nutrient density

One commonly heard view with regards to the potential for Regen Ag to impact on diet and dietary quality is that better soil health can increase the nutrient density of crops. Many studies suggest that the nutrient density of many common crops such as fruit and vegetables has declined in line with an increasing focus on yields and crop growth rates (Bhardwaj, 2024; Davis et al., 2004; Mayer et al., 2022). At the same time, an increasing number of crops have been bred to meet customer flavour demands for sweeter, rather than bitter, taste profiles. For example, some studies estimate that crops such as apples, bananas, tomatoes and potatoes have lost as much as 25-50% of their nutritional

density over the past 25-50 years (measured by the amount of potassium, magnesium and zinc they contain) (Mayer et al., 2022; Drewnowski, 2009). This is attributed to the global shift to higher yield and higher input production practices following the Green Revolution (ibid.)

Although some research suggests improving soils could improve crop nutritional quality (Lal, 2009), establishing clear links between improved nutrition and different agricultural systems is challenging. This is due to the difficulty of making meaningful and consistent comparisons across diverse production practices, crops, soil types, climates, and geographical context. One of the defining six principles of Regen Ag itself is a focus on context specificity (Figure 1) and adapting farming practices to the local context. This makes consistent comparison and evaluation of Regen Ag outputs across different farms almost impossible as a result.

While the research base on the potential links between Regen Ag methods and nutrient density is still emerging, evidence is currently lacking for improved nutrition-related health outcomes resulting from the consumption of organically produced food (Dangour et al., 2010; Smith-Spangler, 2012). While a few studies find evidence of higher levels of antioxidants and lower levels of toxic chemicals and pesticide residues (Baranski et al., 2014), most large reviews of the available evidence (looking at both livestock and horticultural produce) find no convincing indications of a significant difference in nutrient quality between organically and 'conventionally produced'² food (Dangour et al., 2009; Thaise de Oliveira Faoro et al., 2024). The best available evidence is for organically produced meat and dairy, which may have higher levels of polyunsaturated fatty acids (a healthier type of fat) and relatively higher amounts of omega-3 fatty acids, albeit also lower levels of some micronutrients such as iodine and selenium (Średnicka-Tober; 2016a; Średnicka-Tober; 2016b).

The emerging evidence on Regen Ag

Studies looking specifically at Regen Ag and nutrient density describe the potential of some Regen Ag practices to increase micronutrient concentrations in most crops (specifically, those principles aiming to minimise soil disturbance, keeping the soil covered, maintaining a living root year-round, increase diversity, and integrate livestock). As there is good evidence that Regen Ag principles can enhance soil health (BES, 2025), we can therefore use evidence of the link between soil health and nutrient density to assess the potential food nutrition effects of implementing Regen Ag on farm. However, detecting changes in crop nutritional quality is challenging and the complexity of soil ecology and other factors makes it hard

to rigorously link soil health and human health (Manzeke-Kangara et al., 2023; Montgomery et al., 2022).

Emerging sources of evidence do find some increased nutrient density in Regen Ag produced crops, compared to conventional farming, with higher, though varied, levels of phytochemicals, vitamins, and minerals (Montgomery et al., 2022). The studies are quite small (ibid.) however, and the link seems strongest for phytonutrients³. While phytonutrients are associated with a number of positive health outcomes, there is a lack of clinical data for the precise impact of different phytonutrients, and there are no formal recommended intakes for them in the UK. Eating a wide range of plant foods such as fruit, veg, nuts and seeds would likely support a sufficient intake of phytonutrients in the population. Moreover, should Regen Ag-produced food be subsequently used as an ingredient in composite foods or undergo further processing, it is not clear whether any potential gains would remain.



² i.e., systems of farming which include the use of synthetic fertilizers, pesticides, herbicides, disease-resistant and high-yielding plants and animals, large-scale monocropping, intensive tillage of the land, intensive animal farming etc.

³ Naturally occurring chemicals found in certain plants which are believed to be beneficial to human health and to help prevent various diseases.

Overall, there is a need for more research in this field, with evidence lacking. However, because the nutrient density of production practices is so context dependent, even if the evidence base on Regen Ag and nutrient content expands it will remain difficult to extrapolate as to which practices provide which specific nutrient benefits. While it may be possible to model the potential impact of Regen Ag approaches on population level health, it will always be hard to quantify this with any level of certainty. As such, making the case for Regen Ag on the basis of potential health benefits remains challenging and further research is needed in this area, using better methods for measuring nutrient content and density.

2. DIETARY DIVERSITY

Dietary diversity refers to the variety of different foods or food groups consumed with the aim of providing a nutritionally adequate diet. Dietary diversity is ultimately a more important factor than the nutrient density of individual foods in supporting citizens to eat sufficiently nutritious diets. The general pattern of the foods you eat, and in what proportions, arguably matters more than the

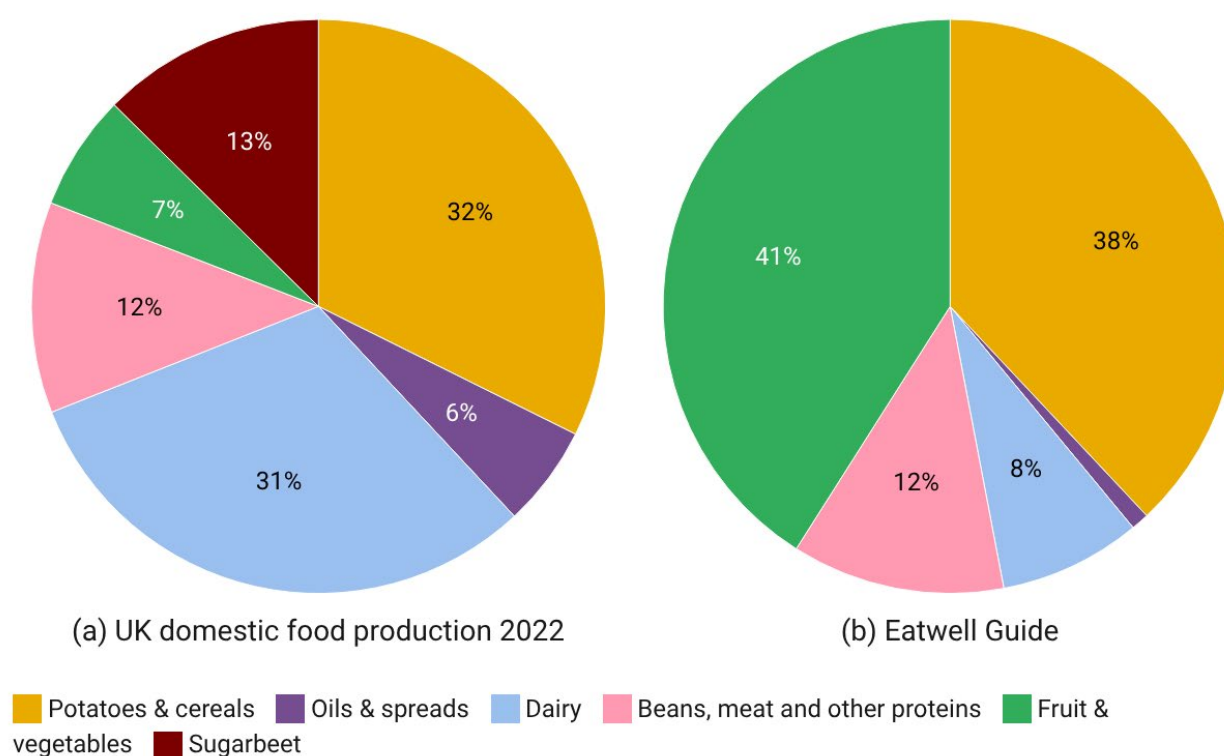
specific micronutrient content of individual foods: i.e. eating 5-a-day of conventionally produced fruit and veg is going to be better for health than eating only two portions of fruit and veg a day, even if those two portions come from regenerative systems. Given that less than 0.1% of the population currently eat in accordance with the Government's recommended diet (the Eatwell Guide), with just 17% of adults eating their 5-a-day, changing what we eat is crucial for shifting diets and improving health in the UK (NDNS, 2025; Scheelbeek, 2020).

The expected shifts towards an increase in production of fruit, veg and beans envisaged by stakeholders — should a shift towards Regen Ag happen at scale — aligns with what we know about the current mismatch between dietary guidelines and what we produce in the UK (see Figure 5), and how diets in the UK need to change to be more healthy and sustainable (NHS, 2022). Currently, fruit and vegetables have the lowest self-sufficiency rate of the food groups, producing 7% and 55% respectively of supply (Defra 2024). However, currently Regen Ag doesn't appear to have a clear vision or principle centring on edible horticulture.

FIGURE 5

The mismatch between dietary guidelines and UK domestic food production: 41% of our diets should come from fruit and veg, yet currently we produce only 7% of that.

2025. <https://doi.org/10.6084/m9.figshare.32024286>



Food groups are based on the groups in the Eatwell Guide. Excludes foods used for animal feed, seed and non-food uses.

Chart: Adapted from Kelly, N.M et al (2025) Public Health Nutrition • Source: FAOSTAT data • Created with Datawrapper

Survey respondents largely thought a shift to Regen Ag would lead to a decline in the production of meat, although there is a lack of consensus on how Regen Ag would impact on livestock production. The Regen Ag principle of integrating livestock onto farms could lead to a reduction in numbers should this lead to less industrial livestock production and the integration of livestock into cropping; or to an increase if new livestock are brought in by farmers previously focussed exclusively on horticulture. There is a risk with the latter scenario that this may lead to an increase in livestock farming in the UK instead of the levels of livestock reduction we need to meet health and sustainability goals (CCC, 2025; National Food Strategy, 2021).

Although there are some exceptions, with some seeing livestock as not essential where other approaches deliver the same functions (BES, 2025), livestock integration is considered by many to be one of the six core principles of Regen Ag. Many Regen Ag farmers use mixed farming practices and grazing animals to support an improvement in soil health. However, despite the focus on livestock integration, intensive or industrial livestock systems are considered by most proponents of Regen Ag as being very clearly outside its realms, so in theory a Regen Ag system could lead to lower stocking densities in line with the Climate Change Commission's recommendations. Pork and poultry make up most intensively produced meat in the UK, so a widespread shift to Regen Ag may see lower levels of pork and chicken production but perhaps an increase in beef. While more farms grazing ruminant livestock would have benefits for soil health, nature and biodiversity objectives, there may be negative impacts on the UK's GHGEs and therefore some trade-offs to consider here.

Ultimately, how far Regen Ag may impact UK diets depends on the extent to which it results in a change in the proportion of the foods people eat, which rests on several assumptions. These assumptions include Regen Ag driving a change in what is being produced and grown (through greater crop diversity, more rotations etc), that a change in production will shift consumer demand, and that the UK will not simply compensate for any changes by increasing imports. Any changes in consumer demand will also likely require a significant level of behaviour change. For example, the vast majority (43%) of meat eaten in the UK is chicken (The Food Foundation, 2025b), and so a scenario in which people reduce their chicken consumption in favour of more expensive beef products under a scale-up of Regen Ag will require a significant amount of consumer change. Moreover, the feasibility of Regen Ag changing what type of foods we produce is dependent on several factors, including farmer willingness to change, how receptive



supply chains would be to this change, and the skills base of farmers. It also assumes that a change to what is produced in the UK translates to a change on what ends up on people's plates.

It remains uncertain, then, how far a widespread shift to Regen Ag for UK food production would support dietary diversity and associated health outcomes of UK citizens, but it is likely to have a positive, rather than negative, impact on health if it brings a new production focus, and therefore increased availability, of fruit, veg and pulses and less red meat and sugar, and goes hand in hand with policies to increase demand and consumption of these beneficial foods.

3. FOOD SECURITY

A widespread transition to Regen Ag could bring advantages for food security and the resilience of the UK's food supply. However, this area is not currently clear-cut, and the supporting evidence isn't yet concrete although the evidence base is likely to build.

The widespread adoption of practices associated with Regen Ag (which focus on enhancing soil health) should, in theory, lead to greater resilience and better food security. This is in comparison with current dominant conventional forms of agriculture which are causing major soil degradation and have weak resilience to extreme weather events, putting yields at risk (Environment



Agency, 2019; Defra, 2025). Reducing the dependency on chemical inputs and fossil fuels would also make the system less vulnerable to geopolitical events - such as the sharp rise in food prices in 2022 following the Russian invasion of Ukraine and the impact this had on the global fertiliser market. However, this is very dependent on which Regen Ag practices are applied and in what combination; for example, no-tilling practices can actually result in increased herbicide use, impacting biodiversity and soil health (BES, 2025; Colbach & Cordeau, 2025).

The effect of regenerative practices on crop productivity, too, is uncertain. Some research has shown that yield can be maintained despite reduced pesticide use when employing alternative practices (EARA, 2025; Lechenet et al., 2017; Letourneau et al., 2001; Brunelle et al., 2024) but other studies suggest lower yields per hectare depending on different contexts (Mennan et al., 2020; Finger, 2024; Waschuck et al., 2024; Fenster et al., 2021; Brunelle et al., 2024). The future need to feed a growing UK population would need to take account of the short-term impacts on food security of switching to a Regen Ag system, such as lower yields, even if temporarily. It would also need to consider the possibility that this kind of system could increase production costs and retail prices, posing challenges for low-income households already struggling to afford healthy food.

The evidence that regenerative practices can improve food security in the face of climate change is sparse, with current evidence being mostly anecdotal. What we do know, though, is that a growing proportion of the UK's fruit and veg is dependent on climate-vulnerable countries, putting our supply chains at risk. In 2013, 32% of UK fruit and vegetable imports were from areas defined as climate vulnerable, a 60% increase since 1987 (SHEFS, 2020). Food shortages and price spikes, particularly affecting fruit and vegetable supplies, have been a regular feature during recent years, due to more frequent extreme weather events globally (SHEFS, 2020; BBC News, 2023; Guardian, 2023). Further food price rises are likely if we continue to rely so heavily on imports, with models suggesting climate induced changes to fruit and vegetables availability would be one of the biggest drivers of climate-related deaths by 2050 (Springmann, 2016).

To really test Regen Ag's potential role in food security and resilience, particularly in the face of climate change, there would need to be significant scaling up of Regen Ag approaches, with changes to supply chains in parallel. However, a lack of funding to achieve a scaling of Regen Ag remains a major barrier (Food service Footprint, 2024)

Scaling Regen Ag approaches to support diet and food security



For Regen Ag to deliver the hoped for impact on diets and food security, there would need to be a raft of wider food system changes to allow for the changes to be made and the benefits to be reaped. This will require increased support and funding from the private sector, government policy to support a thriving UK farming sector, and a change in what is made accessible, affordable and appealing to citizens. For example, some options for stakeholders to consider if committed to scaling up Regen Ag to deliver for diet and food security could include:

- Government ensuring that public health, animal welfare, and environmental objectives are considered as part of any trade deal negotiations to avoid any positive changes in production and consumption driven by Regen Ag being offset by imports of food produced to lower standards than in the UK.
- Updating Government Buying Standards to encourage sourcing from UK farmers to avoid imports off-setting any potential benefits and to encourage sourcing from Regen Ag farmers in public procurement contracts.
- A horticulture strategy for England to support a thriving edible horticulture sector and the production and consumption of fruit, veg and beans.
- Increased funding and support for farmers to adopt Regen Ag practices at scale from investors, banks, government subsidy schemes and downstream food businesses such as supermarkets and caterers.
- Government policy ensures that cost is not a barrier to citizens accessing healthy and sustainable diets; for example, by bolstering nutritional safety net schemes and ensuring the cost of a healthy diet is factored into benefits and the minimum wage.
- Businesses support suppliers to transition towards Regen Ag practices, paying them fair prices and avoiding greenwashing and health washing of those products.
- Businesses to shift promotional spend towards healthy and sustainable foods, such as fruit and veg, beans and wholegrains.

The risks and benefits of different narratives around food and Regen Ag

People make various connections to eating, diets and health in how they think and talk about Regen Ag. The way people do this tends to fall into the following narrative groups summarised in Table 1. While the scientific evidence base linking Regen Ag to nutritional quality and content is still emerging, with many hopeful that this may lead to improved health outcomes more generally, it is important to acknowledge the desire from a broad range of stakeholders for a positive story in relation to food, nutrition and Regen Ag. Farmers for example, want to see the positive effects of their efforts to produce more sustainable food rewarded and supporting broader outcomes for the public good. This goodwill and interest in the links between food, nutrition and Regen Ag may pose both risks and benefits for the progression and expansion of Regen Ag. Table 1 summarises these risks and benefits should Regen Ag approaches be adopted at scale in the UK.

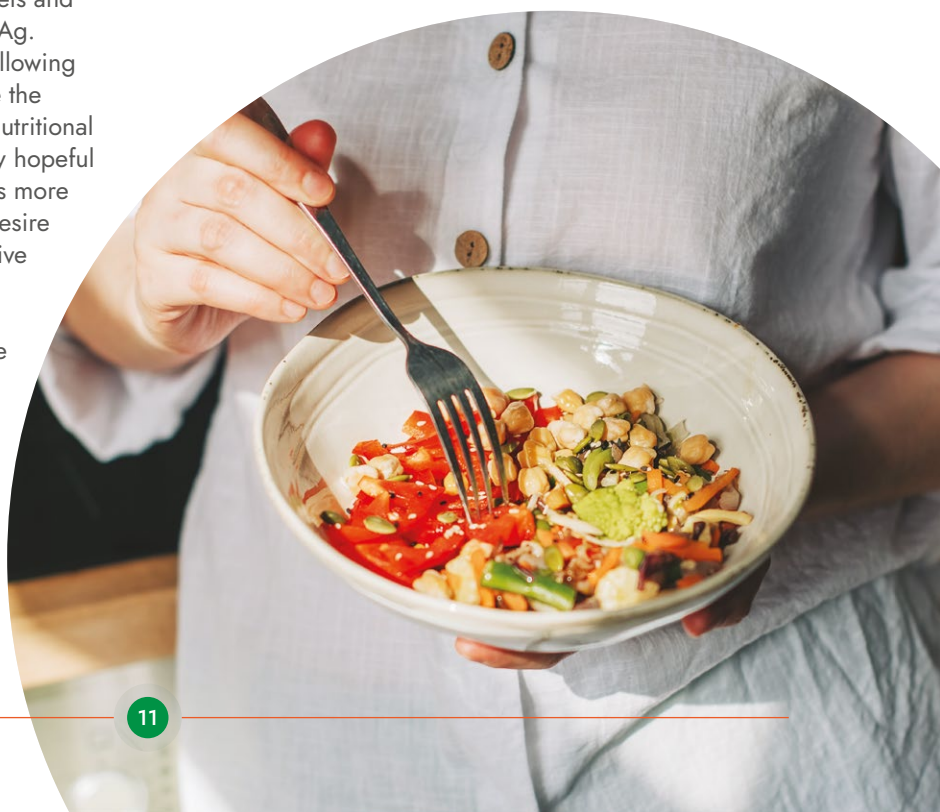


TABLE 1

Narratives connecting Regen Ag to food and health, with benefits and risks

Narratives connecting Regen Ag to food and health	Benefits	Risks
Regen Ag could mean better quality produce with improved nutrient content compared to conventionally produced food, due to the impact of better soil health to improve the nutritional density of crops	- The health halo around more sustainably produced foods may provide access to higher prices for farmers and increased marketing opportunities. - Increased access to Regen Ag produce with improved nutrient content may increase consumer willingness to pay for more sustainably produced food, which could benefit farmer incomes. - Regen Ag-produced foods may have lower levels of pesticide residues and higher levels of some micronutrients and phytonutrients which could bring health benefits to consumers. - A focus on crop breeding and crop diversity in Regen Ag may provide entry points for improving the nutrient content of crops.	- Healthwashing unhealthy foods that use regeneratively-produced ingredients e.g. biscuits with Regen Ag claims. - A focus on production practices impacting on nutrient density and micronutrient deficiencies may distract from the broader systemic changes and shifts in diet composition and access to healthy diets required to properly address micronutrient deficiencies and diet-related non-communicable diseases. - The lack of clarity around what Regen Ag means for meat consumption may lead to a misplaced focus on increasing consumption of Regen Ag-produced meat (given animal-based foods have the best evidence for improved nutrient density), despite widespread agreement that we need to eat less meat for both health and climate goals. E.g. some argue for less meat but a greater proportion coming from Regen Ag, others for more meat and more of this from Regen Ag. - Price premiums, for example those on more sustainably produced food or those making nutrient claims, may be applied to Regen Ag foods placing them out of reach for many and limiting accessibility and reducing the ability of Regen Ag to scale. - Industry may over-price Regen Ag-produced foods and keep any premiums rather than passing them through to farmers. - Higher prices and profit margins on Regen Ag food could increase industry involvement in and control of farmer decision-making.



Narratives connecting Regen Ag to food and health	Benefits	Risks
Regen Ag could improve dietary diversity by changing the types and proportions of foods we are eating due to shifts in what the UK would produce in a regenerative system	• Regenerative production principles support greater crop diversity, which may provide a greater range of fruit, veg, grain and pulse crops for consumption and help citizens to meet the government's healthy eating guidelines. • Regen Ag may lead to a reduction in industrially produced chicken and pork and 'less but better' ruminant meat due to a focus on mixed farming and grazed livestock. This could also have indirect health and environmental benefits, with fewer intensive pig and poultry units resulting in reduced water pollution and lower levels of ammonia.	• Without other forms of intervention, consumer demand for food may not be affected by a change in supply - we could simply compensate by importing more food. • Regen Ag's focus on grazed livestock may lead to smaller numbers of livestock and an increase in meat imports to compensate, with reduced British production leading to more meat available that's produced to lower standards. • An increase in meat imports may lead to more processed meat in supply chains, given that currently $\frac{1}{3}$ of red meat imports are processed (The Food Foundation, 2025b). This would have negative implications for health. • The UK's ability to shift diets by focusing on UK production and Regen Ag practices may have only a limited impact, given we are part of a global food supply chain and a net importer of food overall. • Farmers would likely need significant support in order to shift supply chains towards producing different types of products, which requires support from both upstream and downstream actors as well as government e.g., many farmers are currently tied into producing commodity crops for global supply chains.



Narratives connecting Regen Ag to food and health	Benefits	Risks
Regen Ag could support improved food security by improving the resilience of crops and yields, thus also supporting British farmers.	• Regen Ag could lead to more stable yields and more resilient crops in the face of climate change and the increasing number of extreme weather event • Regen Ag could support greater UK production of fruit, veg and pulses due to a focus on crop diversity. We currently import 65% of our fruit and veg, with a third of this coming from countries at high risk of climate change (SHEFS, 2020). • Regen Ag could meet increasing citizen demands for locally/British grown produce, supporting the British economy and providing alternative markets for farmers.	• Reduced use of fertilizers, antibiotics and pesticides may lead to reduced yields in the short, medium and/or long term (as is the case with organic (ref) and a drop in food production overall, leading to an increase in overseas imports to compensate. • Regen Ag's focus on grazed livestock such as beef and lamb may lead to smaller numbers of livestock and an increase in imports to compensate, in turn increasing our vulnerability to food security shocks caused by climate change and geopolitical turmoil. • Given consumption of beef and lamb has reduced in recent decades, whilst chicken has increased, an increase in grazed livestock and decrease in pork and poultry production would likely leave us further misaligned with domestic consumption (OHID, 2025). • Regen Ag's focus on integrating livestock and mixed farming methods could lead to increased numbers of livestock, thus increasing our red meat consumption with negative implications for health and increasing GHG emissions associated with ruminants.



SPOTLIGHT ON BEANS

The UK's Sustainable Farming Incentive (SFI) offers a payment to farmers for establishing and maintaining a 'herbal ley', a temporary pasture sown with diverse mixes of grasses, legumes (which includes beans, pulses and peas), and herbs which improve soil health by reducing the need for synthetic fertilizers and in the process enhance biodiversity.

Although many farmers use herbal leys and grow legumes as a fallow cover crop or to sell as feed, the UK currently imports most of its beans and pulses for human consumption. There is therefore potential to grow more beans in the UK for human consumption,

which would have the notable co-benefit of supporting population health due to the numerous nutritional benefits of bean consumption, for example their high fibre content. Since herbal leys are already often used in Regen Ag as part of crop cover, legumes could also play an important part in supporting growers to shift towards more sustainable production practices as well as increased production of plant foods, both of which would have a notable impact in reducing current levels of agricultural related greenhouse gas emissions.

However, farmers would first require better government support in order to be able to grow more legumes, with better infrastructure in place to allow them to find routes to market when growing beans and legumes to sell as food rather than as feed.

Regen Ag's potential role in growing the UK's edible horticulture sector - policy opportunities

Fruit and vegetable consumption in the UK needs to rise by 86% to meet dietary guidelines (SHEFS, 2020). Green Alliance estimates expanding domestic edible horticultural production across the UK to meet this demand would add £2.3 billion to the UK economy, create 23,520 jobs and boost farm profits by 3% across the country (Green Alliance, 2025). As it stands, UK fruit and vegetable production is contracting - there was a 13% reduction in domestic vegetable production between 2021 and 2023, while fruit production dropped by 12% between 2022 and 2023 (Defra, 2024). Sustain reports that 49% of British fruit and vegetable farmers say it's likely they will go out of business in the next 12 months due to lack of support, labour shortages and unfair supply chains (Sustain, 2023).

However, increasing fruit and vegetable production in the UK could be a major opportunity. A recent Institute of Grocery Distribution (IGD) [report](#) highlighted horticulture as a priority to drive the shift to healthier, more sustainable diets. The report highlights that strategic investment in UK horticulture could boost annual production value by £1.3bn and attract £5bn in investment by 2030, supporting local economies and strengthening food security. It advocates for a unified national strategy with clear responsibilities and timelines to unlock this potential and prevent economic decline in the sector.

The Government has committed to a Food Strategy, aiming to ensure the UK's food system better supports health, sustainability and resilience objectives. It has also committed to publishing a [25-year farming roadmap](#) which aims to give farmers long-term certainty, improve profitability and sustainability. These plans should outline routes to increase both demand and supply of domestically produced fruit, vegetables and pulses, and policymakers should consider the role of Regen Ag with its focus on crop diversity and mixed farming methods in meeting the objectives of these strategies.



Summary

Despite differing opinions on the potential of Regenerative Agriculture to impact on diet and food, the majority (66%) of TABLE's survey respondents said they think UK food and farming needs to change substantially in the face of global environmental and food security crises.

With Defra's current food strategy looking to ensure the UK's food system better supports health, sustainability and resilience objectives, Regen Ag and the expansion of regenerative approaches could offer one such route into meeting these goals, although a broader range of changes to the wider food system, working in combination, are also required. Regen Ag could offer opportunities to connect food and agri-environment goals, both in terms of practice and in terms of building common ground between groups.

However, there are many narratives around Regen Ag which are pushed by different stakeholders, posing a variety of risks. In addition, current adoption of Regen Ag practices remains limited, with a great number of uncertainties as to the impact of Regen Ag on diets and food security, should these approaches be adopted at scale across the UK.

Policymakers working on food and health policy and planning should be made aware of the complexities of Regen Ag's relationship with diets and health and assumptions should be avoided where possible. Ultimately, beyond the environmental benefits of Regen Ag which support a transition to a sustainable food system, practices which maintain healthy environments and bring new focus to fruit, vegetables, pulses and other wholefoods are likely to be beneficial for human health.

As such, Regen Ag practices should be carefully considered as a potential contributing lever for necessary food system shifts, and certain practices should be selectively with careful consideration that this may involve trade-offs under different scenarios.

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REFERENCES

- Barański, M., Średnicka-Tober, D., Volakakis, N., Seal, C., Sanderson, R., Stewart, G. B., Benbrook, C., Biavati, B., Markellou, E., Giotis, C., Gromadzka-Ostrowska, J., Rembiałkowska, E., Skwarło-Sońta, K., Tahvonen, R., Janovská, D., Niggli, U., Nicot, P., & Leifert, C. (2014). Higher antioxidant and lower cadmium concentrations and lower incidence of pesticide residues in organically grown crops: a systematic literature review and meta-analyses. *British Journal of Nutrition*, 112(5), 794–811. <https://doi.org/10.1017/S0007114514001366>
- BBC News (2023). UK supermarkets face tomato shortages <https://www.bbc.co.uk/news/business-64712361>
- Bhardwaj, R. L., Parashar, A., Parewa, H. P., & Vyas, L. (2024). An Alarming Decline in the Nutritional Quality of Foods: The Biggest Challenge for Future Generations' Health. In *Foods* (Vol. 13, Issue 6). Multidisciplinary Digital Publishing Institute (MDPI). <https://doi.org/10.3390/foods13060877>
- Brunelle, T., Chakir, R., Carpentier, A., Dorin, B., Goll, D., Guilpart, N., Maggi, F., Makowski, D., Nesme, T., Roosen, J., & Tang, F. H. M. (2024). Reducing chemical inputs in agriculture requires a system change. *Communications Earth and Environment*, 5(1), 1–9. <https://doi.org/10.1038/S43247-024-01533-1>; SUBJ/META
- British Ecological Society (BES) (2025). Regenerative Agriculture in the UK. An ecological perspective <https://naturerecovery.ox.ac.uk/outputs/regenerative-agriculture-in-the-uk-an-ecological-perspective/>
- Burgess PJ, Harris J, Graves AR, Deeks LK (2019) Regenerative Agriculture: Identifying the Impact; Enabling the Potential. Report for SYSTEMIQ. 17 May 2019. Bedfordshire, UK: Cranfield University
- Colbach, N., & Cordeau, S. (2022). Are No-Till Herbicide-Free Systems Possible? A Simulation Study. *Frontiers in Agronomy*, 4, 823069. <https://doi.org/10.3389/FAGRO.2022.823069/BIBTEX>
- Climate Change Committee (CCC) (2025). Progress in reducing emissions – 2025 report to Parliament. <https://www.theccc.org.uk/publication/progress-in-reducing-emissions-2025-report-to-parliament/>
- Cusworth G and Garnett, T. (2023). What is regenerative agriculture? TABLE Explainer. TABLE, University of Oxford, Swedish University of Agricultural Sciences and Wageningen University and Research. [Doi.org/10.56661/2caf9b92](https://doi.org/10.56661/2caf9b92)
- Dangour, A. D., Dodhia, S. K., Hayter, A., Allen, E., Lock, K., & Uauy, R. (2009). Nutritional quality of organic foods: A systematic review. *American Journal of Clinical Nutrition*, 90(3), 680–685. <https://doi.org/10.3945/ajcn.2009.28041>
- Dangour AD, Lock K, Hayter A, Aikenhead A, Allen E, Uauy R (2010). Nutrition-related health effects of organic foods: a systematic review. *Am J Clin Nutr*. Jul;92(1):203-10. doi: 10.3945/ajcn.2010.29269. Epub 2010 May 12. PMID: 20463045.
- Davis DR, Epp MD, Riordan HD (2004). Changes in USDA food composition data for 43 garden crops, 1950 to 1999. *J Am Coll Nutr*. Dec;23(6):669-82. doi: 10.1080/07315724.2004.10719409. PMID: 15637215.
- Defra (2024). UK Food Security Report 2024. <https://www.gov.uk/government/statistics/united-kingdom-food-security-report-2024>
- Defra. (2025). UK Pesticides National Action Plan 2025: Working for a more sustainable future. <https://www.gov.uk/government/publications/uk-pesticides-national-action-plan-2025/uk-pesticides-national-action-plan-2025-working-for-a-more-sustainable-future>
- Drewnowski, A. (2009). Defining nutrient density: development and validation of the nutrient rich foods index. *Journal of the American College of Nutrition*, 28(4), 421S-426S. <https://doi.org/10.1080/07315724.2009.10718106>
- EARA. (2025). Regenerating Europe from the Ground Up Farmer-led Research on Europe's Full Productivity. www.eara.farm
- Environment Agency (2019). The state of the environment: soil. Key findings. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/805926/State_of_the_environment_soil_report.pdf
- Fenster TLD, LaCanne CE, Pecinka JR et al (2021). Defining and validating regenerative farm systems using a composite of ranked agricultural practices [version 1; peer review: 2 approved]. *F1000Research* 2021, 10:115 (<https://doi.org/10.12688/f1000research.28450.1>)
- Finger, R. (2024). Europe's ambitious pesticide policy and its impact on agriculture and food systems. *Agricultural Economics*, 55, 265–269. <https://doi.org/10.1111/agec.12817>
- Foodservice Footprint (2024). Footprint Forum report: Getting into the weeds of 'regen ag'. <https://foodservicefootprint.com/getting-into-the-weeds-of-regen-ag/>
- Giller, K. E., Hijbeek, R., Andersson, J. A., & Sumberg, J. (2021). Regenerative Agriculture: An agronomic perspective. *Outlook on Agriculture*, 50(1), 13–25. <https://doi.org/10.1177/0030727021998063>
- Green Alliance (2025). The strong economic case for expanding UK horticulture. <https://green-alliance.org.uk/briefing/the-strong-economic-case-for-expanding-uk-horticulture/>
- Hirt, H. (2020). Healthy soils for healthy plants for healthy humans. *EMBO Reports*, 21(8). <https://doi.org/10.15252/EMBR.202051069>
- Institute of Grocery Distribution (IGD). Viewpoint: Driving growth through a thriving food system. <https://www.igd.com/social-impact/economics/reports/viewpoint-driving-growth-through-a-thriving-food-system/71693>
- Kelly NM, Wells R, Sharpe R, Reynolds C (2025). Mismatches between UK food supply and dietary guidelines: a dietary gap assessment. *Public Health Nutrition*. 28(1):e121. doi:10.1017/S1368980025100633
- Lal, R. (2009). Challenges and opportunities in soil organic matter research. <https://bsssjournals.onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2389.2008.01114.x>

- Lechenet, M., Dessaint, F., Py, G. et al. Reducing pesticide use while preserving crop productivity and profitability on arable farms. *Nature Plants* 3, 17008 (2017). <https://doi.org/10.1038/nplants.2017.8>
- Letourneau, D.K. and Goldstein, B. (2001), Pest damage and arthropod community structure in organic vs. conventional tomato production in California. *Journal of Applied Ecology*, 38: 557-570. <https://doi.org/10.1046/j.1365-2664.2001.00611.x>
- Manzeke-Kangara, M.G. et al. (2023). Do agronomic approaches aligned to regenerative agriculture improve the micronutrient concentrations of edible portions of crops? A scoping review of evidence. <https://www.frontiersin.org/journals/nutrition/articles/10.3389/fnut.2023.1078667/full>
- Mayer AB, Trenchard L, Rayns F. (2022). Historical changes in the mineral content of fruit and vegetables in the UK from 1940 to 2019: a concern for human nutrition and agriculture. *Int J Food Sci Nutr*. May;73(3):315-326. doi: 10.1080/09637486.2021.1981831. Epub 2021 Oct 15. PMID: 34651542.
- Mennan, H., Jabran, K., Zandstra, B. H., & Pala, F. (2020). Non-Chemical Weed Management in Vegetables by Using Cover Crops: A Review. *Agronomy*, 10(2), 257. <https://doi.org/10.3390/agronomy10020257>
- Montgomery, D. R., Bickel, A., Archuleta, R., Brown, P., & Jordan, J. (2022a). Soil health and nutrient density: preliminary comparison of regenerative and conventional farming. *PeerJ*, 10, e12848. <https://doi.org/10.7717/PEERJ.12848/SUPP-2>
- National Food Strategy (2021). The Plan. <https://www.nationalfoodstrategy.org/>
- NHS (2022). The Eatwell Guide. <https://www.nhs.uk/live-well/eat-well/food-guidelines-and-food-labels/the-eatwell-guide/>
- Office for Health Improvement & Disparities (OHID) (2025). National Diet and Nutrition Survey 2019 to 2023: report. <https://www.gov.uk/government/statistics/national-diet-and-nutrition-survey-2019-to-2023/national-diet-and-nutrition-survey-2019-to-2023-report>
- Ramkumar, D., Marty, A., Ramkumar, J., Rosencranz, H., Vedantham, R., Goldman, M., Meyer, E., Steinmetz, J., Weckle, A., Bloedorn, K., & Rosier, C. (2024). Food for thought: Making the case for food produced via regenerative agriculture in the battle against non-communicable chronic diseases (NCDs). *One Health*, 18, 100734. <https://doi.org/10.1016/j.ONEHLT.2024.100734>
- Sustainable and Healthy Food Systems (SHEFS) (2020). Policy Brief 1: Is the UK's supply of fruit and vegetables future proof? https://foodfoundation.org.uk/sites/default/files/2024-11/SHEFS_Fruit-and-Veg-Briefing-1-FINAL.pdf
- Scheelbeek P, Green R, Papier K, et al (2020). Health impacts and environmental footprints of diets that meet the Eatwell Guide recommendations: analyses of multiple UK studies *BMJ Open*;10:e037554. doi: 10.1136/bmjopen-2020-037554
- Schreefel, L., Schulte, R. P. O., de Boer, I. J. M., Schrijver, A. P., & van Zanten, H. H. E. (2020). Regenerative agriculture – the soil is the base. *Global Food Security*, 26. <https://doi.org/10.1016/j.gfs.2020.100404>
- Smith-Spangler, C., Brandeau, M. L., Hunter, G. E., Clay Bavinger, J., Pearson, M., Eschbach, P. J., Sundaram, V., Liu, H., Schirmer, P., Stave, C., Olkin, I., & Bravata, D. M. (2012). Are organic foods safer or healthier than conventional alternatives?: a systematic review. *Annals of Internal Medicine*, 157(5), 348–366. <https://doi.org/10.7326/0003-4819-157-5-201209040-00007>
- Springmann, M., Mason-D'Croz, D., Robinson, S., Garnett, T., Godfray, H. C. J., Gollin, D., Rayner, M., Ballon, P., & Scarborough, P. (2016). Global and regional health effects of future food production under climate change: A modelling study. *The Lancet*, 387(10031), 1937–1946. [https://doi.org/10.1016/S0140-6736\(15\)01156-3](https://doi.org/10.1016/S0140-6736(15)01156-3)
- Średnicka-Tober, D., Barański, M., Seal, C. J., Sanderson, R., Benbrook, C., Steinshamn, H., Gromadzka-Ostrowska, J., Rembiałkowska, E., Skwarło-Sońta, K., Eyre, M., Cozzi, G., Larsen, M. K., Jordon, T., Niggli, U., Sakowski, T., Calder, P. C., Burdge, G. C., Sotiraki, S., Stefanakis, A., ... Leifert, C. (2016a). Higher PUFA and n-3 PUFA, conjugated linoleic acid, α -tocopherol and iron, but lower iodine and selenium concentrations in organic milk: a systematic literature review and meta- and redundancy analyses. *British Journal of Nutrition*, 115(6), 1043–1060. <https://doi.org/10.1017/S0007114516000349>
- Średnicka-Tober, D., Barański, M., Seal, C., Sanderson, R., Benbrook, C., Steinshamn, H., Gromadzka-Ostrowska, J., Rembiałkowska, E., Skwarło-Sońta, K., Eyre, M., Cozzi, G., Krogh Larsen, M., Jordon, T., Niggli, U., Sakowski, T., Calder, P. C., Burdge, G. C., Sotiraki, S., Stefanakis, A., ... Leifert, C. (2016b). Composition differences between organic and conventional meat: a systematic literature review and meta-analysis. *British Journal of Nutrition*, 115(6), 994–1011. <https://doi.org/10.1017/S0007114515005073>
- Sustain (2023) Half of UK fruit and veg farmers fear closure due to supermarket buying behaviour. <https://www.sustainweb.org/news/sep23-get-fair-about-farming/>
- Thaise de Oliveira Faoro, D., Artuzo, F. D., Rossi Borges, J. A., Foguesatto, C. R., Dewes, H., & Talamini, E. (2024). Are organics more nutritious than conventional foods? A comprehensive systematic review. *Heliyon*, 10(7), e28288. <https://doi.org/10.1016/j.HELİYON.2024.E28288>
- The Food Foundation (2025a). The Broken Plate 2025. <https://foodfoundation.org.uk/publication/broken-plate-2025>
- The Food Foundation (2025b). Meat Facts. <https://foodfoundation.org.uk/publication/meat-facts>
- The Guardian. (2023). Why are UK supermarkets facing fresh food shortages? Food & drink industry Retrieved from <https://www.theguardian.com/business/2023/feb/22/problem-shortage-fresh-food-uk-supermarkets>
- Washuck, N., Hanson, M., & Prosser, R. (2022). Yield to the data: some perspective on crop productivity and pesticides. *Pest Management Science*, 78(5), 1765–1771. <https://doi.org/10.1002/PS.6782>
- Zürich, E., & Correspondence Robert Finger, S. (2024). Europe's ambitious pesticide policy and its impact on agriculture and food systems. *Agricultural Economics*, 55(2), 265–269. <https://doi.org/10.1111/AGEC.12817>

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