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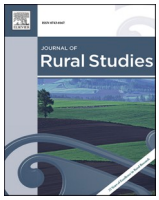

Contextualising farmer perspectives on regenerative agriculture: A post-productivist future?

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ABSTRACT

Within agri-food scholarship, longstanding debates have focused on the empirical applicability and conceptual utility of differing agricultural paradigms. These have often dovetailed with considerations around the future of agriculture in countries such as the UK given a shift in emphasis away from the central tenets of a high-input, yield-oriented productivism. Alternative diagnoses, particularly in notions of a post-productivist paradigm, have proven influential in capturing broad changes in the restructuring of agricultural activity. Whilst debates around the characterisation of these paradigms continue, they highlight distinct contestations in broader (and shifting) questions around what agriculture should be 'for', e.g. whether environmental 'goods' should be valued more highly than material production. Situating our paper within these ongoing debates, we draw on farmer perspectives in examining the adoption of regenerative agricultural practices in two farmer clusters in the East and South-West of England respectively. As a diverse array of practices which appear favourably positioned in a post-Brexit policy environment, we explore the ways in which regenerative agriculture can be understood as seeking to reconcile productivist and post-productivist tendencies. Drawing attention to the tensions, contradictions and uncertainties at play in these farmer perspectives, we highlight: the environmental and emotional appeal of regenerative agriculture compared to its adoption for more pragmatic (economic) reasons; the parallels and differences between regenerative agriculture and organic production; and the multiple sources of trusted information drawn upon by farmers in an uncertain policy environment. We conclude the paper by reflecting on the need to better contextualise and conceptualise contemporary interest in regenerative agriculture within longer theoretical lineages, in which the voice of farmers themselves must be central.

1. Introduction

Across agri-food scholarship, processes of agricultural change have long been recognised as contested and complex. A significant array of overlapping and cross-cutting debates, playing out particularly within this journal (see e.g. Mather et al., 2006; Walford, 2003; Wilson, 2008), have pointed to the complexities associated not only with characterising patterns of agricultural activity, but understanding the divergent drivers of change over time and across different geographical contexts (Wilson and Rigg, 2003; Lobley and Potter, 2004). A particular focus within these debates has been on questioning the fate of *productivism*, characterised as a yield-oriented and high-input agricultural paradigm which has for a long time been dominant in global policy agendas (more recently morphing under guises such as 'sustainable intensification', see Garnett et al., 2013). Since the 1990s, however, and amidst growing awareness of the social, ecological and economic ills associated with the status quo (Anderson and Rivera-Ferre, 2021), questions have arisen around whether productivism has been superseded in certain geographical contexts, leading to the emergence of a *post-productivist* paradigm (Wilson, 2001; Evans et al., 2002). Other accounts have questioned the existence and conceptual utility of this characterisation, for example in the identification of a *neo-productivist* (Wilson and

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Burton, 2015) paradigm and/or a shift towards *multifunctionality* in agricultural landscapes (Bjørkhaug and Richards, 2008). Whilst an often nebulous terrain, these debates have proven generative in exploring what might come 'after' productivism and where different agricultural practices are positioned within these diagnoses.

Situating our contribution within this conceptual terrain, this paper focuses on a current development which has grown in popularity in recent years, and particularly since circa 2015. The incipient promise of *regenerative agriculture* has been accompanied not only by a wide array of academic scholarship (see Giller et al., 2021), but in various books, journalistic articles and podcasts aimed at lay and specialist audiences alike. Despite a lack of legal and regulatory coherence around defining regenerative agriculture, this has not inhibited its growing appeal, though it is widely acknowledged that regenerative agriculture proceeds from a foundation of promoting soil health (Schreefel et al., 2020). The farmer-led organisation Groundswell highlights five key principles building on this foundation: avoiding disturbing the soil, covering the surface (e.g. cover crops), keeping living roots in the soil, growing diverse (polycultured) crops, and bringing grazing animals back on to the land (see Table 1). The purported benefits are numerous, including–but by no means limited to–enhancing soil fertility and biodiversity, reducing soil erosion and sequestering carbon. In the UK context in which this research is situated, the post-Brexit regulatory environment and shift away from the European Union's Common Agricultural Policy (CAP) has seen regenerative agricultural practices favourably positioned within initiatives such as the CAP's replacement, the Environmental Land Management scheme (ELMs). Within ELMs, the Sustainable Farming Incentive (SFI) more specifically appears likely to position regenerative principles as aspirational goals for all farmers to reach.

Our paper contributes to and extends these debates through a case study of the adoption of regenerative agricultural practices in two farmer clusters in the South-West and East of England. Our evidence shows how regenerative agriculture represents an effort to balance the contradictions of productivist and post-productivist paradigms, often problematically framed as antinomical to one another. In turn, we argue for the need to engage farmers further in research, not only to better understand how they interpret changing policy environments, but in understanding the various drivers and motivators at play in shaping their practices.

This article proceeds as follows. Firstly, we turn to a more substantive review of the literature around productivism and changing agricultural paradigms, seeking to situate interest in regenerative agriculture within these debates. Following a brief exploration of regenerative agriculture and its longer historical trajectories, we outline our methodological approach, providing further detail of the aims and context of our research. The core of the paper presents an empirical analysis of our interview data, focusing primarily on three key themes. These include: the environmental and emotional appeal of regenerative agriculture compared to its adoption for more pragmatic (economic) reasons; the parallels and differences between regenerative agriculture and organic production; and the challenges associated with navigating an uncertain policy environment in which the future of agriculture is up for debate. Finally, in the concluding section of the paper, we provide further consideration of the ways in which regenerative agriculture represents a new chapter in the ongoing tensions and contradictions between productivist and post-productivist paradigms.

Table 1
Five principles of regenerative agriculture.

1 Don't disturb the soil.
Soil supports a complex network of worm-holes, fungal hyphae and a labyrinth of microscopic air pockets surrounded by aggregates of soil particles. Disturbing this, by ploughing or heavy doses of fertiliser or sprays will set the system back.
2 Keep the soil surface covered.
The impact of rain drops or burning rays of sun or frost can all harm the soil. A duvet of growing crops, or stubble residues, will protect it.
3 Keep living roots in the soil.
In an arable rotation there will be times when this is hard to do but living roots in the soil are vital for feeding the creatures at the base of the soil food web; the bacteria and fungi that provide food for the protozoa, arthropods and higher creatures further up the chain. They also keep mycorrhizal fungi alive and thriving and these symbionts are vital for nourishing most plants and will thus provide a free fertilising and watering service for crops.
4 Grow a diverse range of crops.
Ideally at the same time, like in a meadow. Monocultures do not happen in nature and our soil creatures thrive on variety. Companion cropping (two crops are grown at once and separated after harvest) can be successful. Cover cropping, (growing a crop which is not taken to harvest but helps protect and feed the soil) will also have the happy effect of capturing sunlight and feeding that energy to the subterranean world, at a time when traditionally the land would have been bare.
5 Bring grazing animals back to the land.
This is more than a nod to the permanent pasture analogy, it allows arable farmers to rest their land for one, two or more years and then graze multispecies leys. These leys are great in themselves for feeding the soil and when you add the benefit of mob-grazed livestock, it supercharges the impact on the soil.

Source: https://groundswellag.com/principles-of-regenerative-agriculture/ (accessed 30 November 2022)

2. Beyond productivism? A literature review

In order to situate regenerative agriculture within ongoing debates around changing agricultural paradigms, it is worth returning briefly to debates that arguably peaked a few years either side of the Millennium. At this point, the extent to which a discernible shift away from a 'productivist' logic was being debated at length, with the topic remaining contested and unsettled to the present day (see e.g. Booth, 2023).[1] Interest in 'post-productivism' was sparked in the early-to-mid 1990s (see in particular Ward, 1993) to suggest that the core tenets of productivism were simply no longer accurate diagnoses in many parts of the world, particularly in Western Europe. Put differently, the productivist paradigm–manifesting perhaps most clearly in the so-called 'Green Revolution' (Horlings and Marsden, 2011), where the focus lay in improving yields by taking full advantage of the mechanisation and industrialisation of input-intensive agriculture, had had its day, and was being supplanted by something else which exceeded its explanatory scope. The task, for agri-food scholars, was therefore to lay claim to what followed, and whether the 'post-' prefix suitably (and fairly) captured the typical dynamics then found in the heterogeneous agricultural regions of countries such as England (Lobley and Potter, 2004).

The extensive debate that followed was notably cautious around the post-productivist diagnosis, not least in that the 'post' risked being read as implying an inversion, overcoming or transcendence of productivism. Clearly–and demonstrably in empirical terms–it was not as simple as a wholesale and immediate shift. Rather, as Evans et al.'s (2002) important intervention into the debate showed, it remained in many respects difficult to judge given the looseness through which post-productivism was defined. In light of this problem, Evans et al. suggested that post-productivism could be read in three different, and in some respects competing, lights. Firstly, it was conceptual, potentially useful in capturing a broad array of changing agricultural practices which no longer appeared to aim towards increasing yields above all else. Secondly, it was temporal, with its origins traced to a starting point somewhere between the 1970s and 1990s (e.g. the CAP reforms of 1992) and by some accounts a transitory paradigm inevitably leading towards landscape-scale multifunctionality (Brandt, 2003). Thirdly, and in many respects crucially, post-productivism was something spatial, manifesting to different extents in different geographical contexts. This point is not only applicable in terms of the *kinds of* agriculture under consideration–for example, using large-scale arable agriculture as an empirical barometer may ascertain different results if compared to e.g. upland

[1] Despite problematisations of a productivist/post-productivist split, as well as general aversion to dichotomous conceptualisations, this framing remains relevant and widely drawn upon.

sheep farming–but where agricultural production took place. In the Western European context, countries such as England were able to take advantage of technological advances to just-in-time supply chains across transnational borders (see Ouma, 2015), paired with the growth of export-dominated markets (an exemplary case being tomatoes grown in Morocco and Spain primarily destined for the UK, Germany and France). In cases such as tomatoes, where seasonal conditions combined with a reliance on a transitory migrant worker class could be used to produce cheap (in the sense of price) tomatoes to satisfy global markets, productivism was distinctly spatialised into what Medland (2016) describes as 'enclaves'. The point, of course, was that UK agriculture no longer had to try and compete on the same terms, which at least on purely economic logic was in some sectors inconceivable. This meant that agriculture might instead aim towards different goals and value different kinds of activity such as enhancing biodiversity (Brouder et al., 2014).

Evans et al.'s (2002) influential account highlights five key dimensions to post-productivism, particularly notable in their contradistinction from a productivist ethos: a shift from a focus on quantity (i.e. yields) to 'quality' (see also Goodman, 2003); the diversification of on-farm activities; extensification; the dispersal of production; alongside the strengthening of environmental protection and restructuring of government support for agriculture. Subsequent years have seen debate continued in new directions, taking stock of renewed forms of productivism (e.g. in 'neo-productivism', see Wilson and Burton, 2015) alongside aforementioned debates around multifunctional landscapes (for a fuller discussion, see Bjørkhaug and Richards, 2008). Our intention here is not to attempt to resolve these longstanding debates. Rather, it is to highlight that agricultural paradigms do not neatly end but are 'stretched', contested and change over time through thoroughly geographical dynamics. At the time of writing (May 2023), however, it is particularly timely to suggest that the pace of change in agricultural paradigms ebbs and flows with varying degrees of intensity. In the English context, the aforementioned shift away from the CAP post-Brexit and the long-awaited roll-out of its replacement framework, the ELMs, has placed old and new questions back on the table. Whilst its intrinsic emphasis on *sustainable* farming (hence the aforementioned SFI) entails that the new scheme is highly unlikely to be crudely and anachronistically productivist in emphasis, there remain open questions around the extent to which the scheme will strike a balance between supporting the production of food (cf. related discourses around a concern for 'self-sufficiency' and a 'reliance' on imports, see Beltran-Peña et al., 2020) and environmental 'goods', for example in supporting ecosystem services and developing 'natural capital' (for a fuller discussion see Brady et al., 2015). Further questions arise as to whether the financial support to farmers will in any way compare to the CAP, and the extent to which the ELMs will monetise (and in the process seek to 'conventionalise') practices hitherto closely associated with regenerative agriculture. In turn, broader questions arise around the adequacy of existing diagnoses for understanding the juncture at which English agriculture is positioned, leading us to ask what we might learn from farmers themselves in conceptualising and navigating agricultural paradigms profoundly in flux.

It is worth turning to regenerative agriculture more explicitly to tease out its notable differences from the focus on paradigms discussed so far. Whilst it in many ways connects and/or dovetails with them, it also represents a distinct approach proceeding from divergent foundations. Interest in and usage of the 'regenerative' label, however, is by no means a new development, itself having a long and varied history (Giller et al., 2021). Usage of the regenerative agriculture terminology grew throughout the 1980s, in part due to promotion via the Rodale Institute, a non-profit US-based organisation established in the 1940s to promote organic farming. Writing in 1983, Robert Rodale defined regenerative agriculture as an approach that

> [A]t increasing levels of productivity, increases our land and soil biological production base. It has a high level of built-in economic and biological stability. It has minimal to no impact on the environment beyond the farm or field boundaries. It produces foodstuffs free from biocides. It provides for the productive contribution of increasingly large numbers of people during a transition to minimal reliance on non-renewable resources (Rodale cited in Giller et al., 2021: 14).

Whilst the popularity of the regenerative agriculture description has had a resurgence since 2015 (with usage of the term far outstripping the usage of related approaches, e.g. agroecology, organic farming, conservation agriculture etc.), and despite Rodale's early efforts to define it, regenerative agriculture is marked by extensive disagreements in what constitutes it. For example, a recent review of 28 studies (see Schreefel et al., 2020) notes that beyond a general concern for soil health and biodiversity, a clear definition of regenerative agriculture is lacking, and that different food system actors perceive regenerative agriculture differently. In turn, a provisional definition of regenerative agriculture is proposed as 'an approach to farming that uses soil conservation as the entry point to regenerate and contribute to multiple ecosystem services' (Schreefel et al., 2020: Abstract).[2]

In a similar vein, Newton et al. (2020) draw on a review of 229 journal articles and 25 practitioner documents to point to a lack of a widely accepted definition in legal, regulatory, or even common usage. In turn, Newton et al. also suggest that there is a degree of ambiguity in whether regenerative agriculture ought to be based on engagement with a set of production practices (including the use of cover crops, the integration of livestock and reducing or eliminating tillage), desired outcomes (e.g. to improve soil health, sequester carbon and increase biodiversity), or a combination of the two. Whilst we are sympathetic to these perspectives and agree that a definition is in many respects important, we note with some degree of caution the co-option of the organics movement by industrial and corporate actors, in turn arguably stripping it of its progressive political content (a point that we return to later). Indeed, growing debates point to similar concerns around regenerative agriculture's co-option by dubious political or corporate agendas. For example, a recent IPES-Food briefing entitled 'Smoke and Mirrors' suggests that definitional ambiguities can be exploited in enabling agribusiness to proceed with 'business as usual'. The authors conclude that, in governance and policy circles, various terms such as agroecology, nature-based solutions and regenerative agriculture are 'used in apparently interchangeable ways and without clear definitions' with discussion often remaining on a generic and aspirational level (IPES-Food, 2022: 24). The recent EASAC report also notes that regenerative agriculture has 'no clear consensus definition and may have many components'. It continues to propose a definition of regenerative agriculture in terms of its commitment to maintain agricultural productivity, increase biodiversity, and restore and maintain soil health while enhancing ecosystem services including carbon sequestration (2022: 1).

Acknowledging that regenerative agriculture evades easy definition or neat categorisation, other perspectives have argued that it might better be understood as a social movement emerging from the 'bottom up' within or amongst farmers (cf. O'Donoghue et al., 2022, Burns 2021, see also Sherwood and Uphoff, 2000 on a 'soil health movement'). Whilst we are equally sympathetic to this notion in wishing to retain its political dimension, our concern with analysing regenerative agriculture in these terms has the effect of placing it outside of, or on the margins of, widely acknowledged paradigms. Whilst attention to movements and/or practices that gather traction at the margins or in innovative 'niches' (Maye and Duncan, 2017) is clearly prescient, our concern here is that regenerative agriculture-as-movement defaults to an overly oppositional and countervailing framing. Whilst in many contexts this may well

[2] See LaCanne and Lundgren (2018) on the scope for regenerative agriculture to merge farming and natural resource conservation profitably.

represent a legitimate starting point, the policy agenda surrounding the SFI in post-Brexit England appears more likely to herald the 'breaking out' of more sustainable forms of agriculture, drawing on and incorporating regenerative agriculture-adjacent practices. For Cusworth et al. (2021), the reasons for this are numerous, suggesting that this is being driven by macro-level economic changes (including a growing market for plant-based proteins), political transitions (with an increasing focus on subsidies for 'public goods') combined with shifting attitudes within the agricultural sector (such as the growing prioritisation of soil health, as well as multi-annual profitability over annual yields). Recognising the complex drivers and flux at play, we note Gosnell et al.'s (2019) argument that there are comparatively few empirical studies exploring the processes by which farmers enter into, navigate and sustain a regenerative agriculture approach. Seeking to address this empirical lacuna, here we draw on research undertaken with two farmer clusters to ask whether regenerative agriculture represents a new iteration in long-standing debates around productivism and its potential futures.

3. Methodology

Our work is part of a larger programme of research on transforming UK food systems, funded by the UKRI Strategic Priorities Fund. Within this programme, our project, entitled 'Healthy soil, Healthy food, Healthy people', explores the idea of transforming UK food systems 'from the ground up' (www.h3.ac.uk). Our work attempts to map and measure the process of change towards more regenerative agricultural practices in two farmer clusters in the South-West and East of England. As well as taking a range of environmental measurements to monitor the impact of these changes on soil health, biodiversity and other ecological indicators, we also undertook a series of in-depth semi-structured interviews with 21 farmers and farm managers, also attending their cluster meetings and other informal gatherings. The research was subject to ethical review, administered by the University of Cambridge (PRE-2021.055), and followed good research practice in terms of informed consent, data confidentiality and participant anonymity. None of the farms is named in the analysis that follows and farmers are referred to by pseudonyms (see Table 2).

Table 2
Research participants by cluster, farm size and farm type.

South-West cluster		
Pseudonym	Size of farm	Farm type
Bill Ferguson	250–399ha	Mixed
Chris and David Peel	250–399ha	Mixed
Fred Williams and Mark Lewis	400–649ha	Arable
Martin Smithson	400–649ha	Mixed
William Bennett	650–900ha	Mixed
Don Smith	>900ha	Mixed
East of England cluster		
David Morris	250–399ha	Arable
Peter Bennett	250–399ha	Arable + grazing livestock
James Jones	250–399ha	Arable
Sam Allen	250–399ha	Arable
Tom Massey	400–649ha	Arable
Paul Porter	400–649ha	Arable
Bob Wise	400–649ha	Arable
Alan White	650–900ha	Arable + grazing livestock
John Richardson	650–900ha	Arable + grazing livestock
Alastair Chapman and Vic Lee	650–900ha	Arable
Doug Little and Bruce Fox	>900ha	Arable

While the farmer clusters from which our interviewees were drawn have some female members, we note that all of those who signed up to take part in our research (including all of the interviewees) were men. Recent ONS data suggest that women now comprise around 17% of the British farming population, up from 7% in 2007–8, yet the gender imbalance (nationally and in our sample) is striking.[3] This is particularly relevant to a post-productivist diagnosis as women often enable the diversification of farm incomes, as discussed in Whatmore's (1991) pioneering work on farming women. It was, however, clear from our interviews and farm visits that on-farm decision making frequently relied on other household members, many of whom are women.[4]

The interviews were conducted by four interviewers (JDB, CCJ, PJ, AK) following an agreed interview schedule. The interviews were digitally recorded and transcribed in full. They were then analysed by two of the researchers (JDB, PJ), working independently and then comparing notes as a form of internal calibration. The analysis paid attention to interview content (*what* was said) and style (*how* it was said), including hesitations, use of humour and other paralinguistic features. Although the sample is small and no claims are made as to its wider representativity, the data are extensive (with the transcripts amounting to >150 k words) and sufficiently detailed to enable in-depth analysis. With our methodological approach now detailed, we turn to our empirical analysis.

4. Empirical analysis

> 'I don't know about the term 'regenerative farming' … I think it's … it's evolving, if you know what I mean. […] I don't think it's set in stone' (Chris Peel).

Given the lack of consensus around defining regenerative agriculture, our interviewees were hesitant to use the term without some kind of qualification. Whilst many returned to the proposition that soil health was 'kind of fundamental […] without good soil, you haven't got anything' (Fred Williams & Mark Lewis), others spoke about it with more hesitancy. Acknowledging this definitional ambiguity, we focus here on three areas of debate which help us to position regenerative agriculture within the discussion on changing agricultural paradigms. They are: the emotional and environmental appeal of regenerative agriculture compared to its adoption for more pragmatic (economic) motivations; the parallels and differences between regenerative agriculture and organic farming; and the uncertain policy environment within which regenerative agriculture is currently situated and the lack of trusted information on which to make decisions about the future. We begin by exploring the appeal of regenerative agriculture for farmers in this research.

4.1. The emotional, environmental, and economic appeal of regenerative agriculture

Agriculture in the UK is at the heart of often heated debates about the most desirable forms of land use and its environmental impacts. Reflecting this, for several of our interviewees, regenerative agriculture offered what they interpreted as a societally valued 'way forward' associated with clear environmental benefits. These were intertwined with highly emotional narratives. For example, some spoke of regenerative agriculture as having a redemptive value, enhancing care for the environment and helping them 'to sleep at night' (Bill Ferguson). This resonates with the argument made by Gosnell et al. who refer to the importance of 'deeply held values and emotions' that 'underpin farmers' commitment to regenerative agriculture' (2019: Abstract). One of our interviewees (Fred Williams) described himself as being significantly

[3] See ONS data at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/articles/labourintheagricultureindustry/2018-02-06.

[4] Relatedly, on the lack of racial diversity among British farmers (and in our sample which is entirely white), see the recent Jumping Fences report by a coalition of organizations including the Landworkers' Alliance: https://static1.squarespace.com/static/5eece00ee6780d38b9fb012f/t/63b599ddb28c5936edc62cff/1672845804758/Jumping+Fences+2023+Web.pdf.

'more mindful' now than 20 or 30 years ago, while another spoke about 'treating the countryside well' being 'the right thing to do' (James Jones). Others described regenerative agriculture in terms of 'feeding your heart and soul, more than just growing a crop and being a business: connecting with the soil, the environment [and the] community' (David Morris). Summing up a longer discussion, Bill Ferguson spoke about being 'caring and thoughtful' about the land, living 'a fairly simple life' and maintaining a balance between 'looking after the land, looking after the wildlife [and] looking after the local people'. He said his key aim was to leave the farm 'in better heart' than 15 years ago (when he had taken over the business), 'working within the rules of nature' to produce 'what we think is right' in order to achieve 'regenerative happiness'. In an interview that was full of self-doubt, using the phrase 'I don't know' over 20 times, the same farmer ended on an upbeat note, mirroring back to us the keywords of our project: 'So have we got healthy soils? I hope so. Have we got healthy food? I hope so. Have we got healthy people? Yes, I think so' (Bill Ferguson).[5]

As these extracts highlight, farmers within this research did not make neat distinctions between patterns of agricultural production and what they saw as the wider appeal of a regenerative approach. Complicating more restrictive framings of regenerative agriculture and its primary concern with soil health, it remained unclear across the interviews whether the emotional appeal came directly from their farming, conservation initiatives, a positive community perception of farmers, or other factors altogether (see Tittonell et al. (2022) on regenerative agriculture as a 'palette' of approaches). Other farmers, such as Paul Porter—one of the 'outliers' in this research who distanced himself from regenerative agriculture—recognised the importance of cultivating better community perceptions of farmers, but highlighted some of the difficulties that it posed:

> '[W]e've gone from being part of the community, when we could afford to be part of the community, you know my father made good money, and he employed half the village … So, the balance of the relationship is not what it was, but it's going to have to go back to that … the farmer has got to become more tolerant and an educator … so yes it's a two-way thing. I see it as a two-way thing. But because I am a grumpy old man, I can't be [bothered] with it. I just can't' (Paul Porter).

While these open deliberations around the vocation of farming were recurring within our interviews, others offered a more pragmatic perspective on the perceived (economic) appeal of regenerative agriculture. Some farmers, as might be expected, were explicit in being 'passionate about [addressing] climate change' (Peter Bennett), situating regenerative agriculture within a longer-term transition to a circular economy. Others were blunter on the need to combine such ideals with immediate economic pragmatism: 'If we're not making a profit then we've got to look at it and say why' (Alastair Chapman & Vic Lee). Similarly, one farmer noted that: 'It all sounds great but if it doesn't actually work in the field, you know, it's not going to pay the bills' (Tom Massey). These considerations within our interviews were heightened given that they took place during a period of rapidly rising commodity prices and political turmoil following the Russian invasion of Ukraine. [4] With enormous volatility in the price of fertiliser and other agricultural inputs—accompanied by the high price of grain—the topic of how best to navigate this situation was at the forefront of many discussions. Some participants were therefore interested in pressing ahead with the uptake of regenerative agriculture practices more rapidly than they might have in other circumstances, undergirded by the belief that input prices were likely to remain high in the years to come.

Consequently, several farmers spoke about struggling with recent price increases, particularly in fertiliser and fuel prices, as a motivator for changing their practices. Commenting on the volatility of commodity prices, one farmer (Don Smith) told us that prices that used to fluctuate by £5 in a week could now change by as much in a minute. Doug Little and Bruce Fox said that rising oil prices were 'another reason for going down the direct drill route, because hopefully our oil [and] diesel demand drops'. Having been spending c.£60–70,000 a year on diesel, they saw the move to direct drilling—which avoids ploughing and disturbing the surface of the soil as much as possible—as an opportunity to potentially halve their diesel consumption. The rising cost of diesel was also mentioned by Tom Massey and Paul Porter, while Alastair Chapman and Vic Lee estimated that the move to direct drilling had, over the course of several years, reduced their diesel usage by approximately 30%. James Jones referred to the 'huge instability in input prices' while Peter Bennett spoke of the range of drivers that were pushing them to 'do something slightly different'. He gave the specific example of fertiliser costs that had risen from £675/tonne to £750/tonne overnight in February 2022, compared to a price of around £275/tonne the previous year, forcing him to make rapid adaptations. These deliberations are consistent with recent research that has identified a pragmatic interpretation of regenerative principles, adopted 'under the proviso that it […] measurably improve[s] farm profitability and/or their farm's natural capital' (Cusworth et al., 2021: 134).[5] Consequently, our interview evidence suggests that the uptake of regenerative practices is driven both by a desire to make environmentally beneficial changes as well as a logic of economic pragmatism, either in terms of increasing productivity or, more presciently in the circumstances, reducing costs.

The tensions between these different motivations also come through in the way interviewees discussed and reflected on other regenerative practitioners. Whilst for some—as discussed above—regenerative agriculture simply presented a rational choice in the current economic climate, they felt that others had a commitment to regenerative agriculture that verged on the evangelical. One interviewee spoke at length about this, including his scepticism towards those he thought were in danger of hijacking the term for their own ends:

> 'Regen farming has been hijacked by a bunch of zealots. And if we want to bring regen farming into the mainstream, which is how I understand people want it to be, in other words an adopted practice by the majority of farmers, we have to make it expedient to them. And the problem with the regen farming crowd, the zealots, is that when we try to adopt, as normal commercial farmers, the practices [of regenerative agriculture], they move the goalposts […] because they don't want us to regen farm, *they want regen farming to be an exclusive and elite type of farming*, that only a small percentage of people do, so that they can say we're regen farming, and soon they're going to make a little badge that they put on, you know' (William Bennett, emphasis ours).

Intriguingly, this language of 'zealots' and 'evangelicals' recurred throughout our interviews, with other participants suggesting that advocates of regenerative agriculture 'on the extremes' risked losing sight of the more mundane motivations for adopting regenerative practices:

> 'There are some people who are quite evangelical about it. Which in some ways puts people off I find. I mean *a lot of the regenerative farming stuff is just common sense* that have been done for years. It's almost like people inventing the wheel again. You know the idea of putting livestock back on farms is great, we all know that mixed farming is great for the soil, but the economics of it don't stack up quite so well at the moment' (John Richardson, emphasis ours).

These notions around regenerative principles being 'common sense' or '(re-)inventing the wheel' were reiterated in similar terms by other participants, often returning to the need to prioritise economic

[5] Words like uncertainty, unpredictability and volatility recurred throughout the interviews. They were also apparent at a recent (February 2023) meeting of the East of England farmer cluster where one participant spoke about the shift to regenerative agriculture being 'a leap of faith', relying on 'gut feeling', while others spoke about being 'frightened to death it won't work' and finding it 'terrifying – how little we know'.

considerations and profitability. Such practices needed, from this perspective, to be supported by a rigorous evidence base, given that some regenerative practices were at risk of relying on 'witchcraft':

> 'I mean, there's a little bit of a sort of jokes around hippies and sandal wearing, crazy talk around compost teas, and all that sort of stuff. And I think there's a slight, you know, that there's, there's a fine line to sort of manoeuvre between evidence and witchcraft in a way' (Bob Wise).

Continuing his reflections, Bob Wise suggested that once-sceptical farmers were now interested in regenerative agriculture on the grounds that the evidence was more likely to support its principles: 'You don't get laughed down anymore and hopefully the naysaying will disappear'. Despite this, several participants remained concerned about regenerative agriculture being seen as 'mad' in the minds of their critics or in the opinion of previous generations. As noted by Krzywoszynska (2019), farmers practising sustainable soil management methods can feel separated from the wider farming community. One of our interviewees said that his grandfather would think he was 'absolutely crackers' for adopting regenerative methods (James Jones): 'They think you're mad. Literally nothing short of it'. Another (David Morris) made a similar point, arguing that 'conventional' farmers 'think you're bonkers', while Don Smith said that his family 'all think I'm nuts' for getting into farming, in general, and regenerative agriculture, in particular.[6]

Others were concerned by fellow farmers that they believed were motivated to adopt regenerative practices purely out of it being 'fashionable' (Peter Bennett) or a 'fad' (Fred Williams). Several participants suggested that it was, in many respects, simply 'giving a title to a farming system that a lot of us were doing already' (Martin Smithson). A few interviewees even thought that they were simply seeing the latest version of a cyclical trend, suggesting for example:

> 'I've been around long enough to have seen direct drilling come and go a couple of times. I think it's like a lot of things nowadays, there seems to be a lot of people on the extremes, that don't seem to want to see the bad points as well as the good' (John Richardson).

These comments about seeing things 'coming and going' are clearly relevant to our argument about post-productivism, some versions of which imply processes of linear change rather than a more cyclical repetition and progression. Whilst we return to this debate in the concluding discussion, we now turn to considering how our participants drew a contrast between organic farming and regenerative agriculture.

4.2. Comparisons with organic farming

Developing the above discussions, many farmers noted their interest in the potential to valorise regenerative agriculture, in the process drawing explicit comparisons with organic certification. Yet the need for external accreditation and standardisation was a source of ongoing ambivalence. Echoing earlier discussion, one farmer highlighted his difficulties with regenerative agriculture currently having no set rules or means of accreditation, meaning it could be used in overly loose terms:

> 'I think you'll probably find now people claim they're regenerative agriculture farmers, and they're not even following two out of the five basic principles of regenerative agriculture […] which is quite frustrating … You know, it's like organic is quite obviously organic, because it follows a very strict set of rules to get accredited as organic. There's nothing, there's no equivalent for regen ag' (Bob Wise).

Other participants echoed this perspective, stating that with organic farming, 'You'd know exactly what that means' (James Jones). This was particularly important from a consumer perspective where the meaning of organic 'is quite clear [and] the consumer knows what it means' (Sam Allen), even though the same interviewee also admitted that 'organic farming isn't as black and white as people might think'. These comparisons are mirrored within the literature, where the lack of precision around its definition has led it to be imprecisely conflated with associated approaches such as agroecology (Giller et al., 2021: 13). Some farmers repeatedly returned to a consumer perspective, articulating their desire to take regenerative agriculture 'to market' as a brand that could command a price premium:

> 'I'd really like to be able to grow wheat, maybe older fashioned varieties, in a regenerative way and then have a small mill here, and be able to produce flour, sell that flour branded as regenerative agriculture, and get a significant premium for that … to generate a premium for the product because of the way it's farmed' (Sam Allen).

Acknowledging that other geographical regions such as the United States and Russia can produce cheaper wheat, David Morris suggested that he wanted 'to add value and connect with the consumer'. This, in turn, requires him to 'sell the message of how we farm' which 'goes back to nature-friendly farming and talking about the whole system and communicating the value of healthy produce' (David Morris). The challenge, however, was how to do that given regenerative agriculture's 'less than puritanical' (Cusworth et al., 2021: 133) approach to agricultural inputs—seeking to reduce rather than eliminate them in the case of organics. This was seen both as an opportunity and as a potential challenge. Since Guthman's pioneering work in the US, there has been extensive debate about the way organic farming has been 'conventionalised' as a result of the corporate sector's interest in this form of production. Elaborating her original argument (Guthman, 2004a), Guthman draws on evidence from the Californian organic sector to show how agribusiness has influenced rule-setting and accreditation processes, inter-sectoral business dynamics and agronomic practices, undermining the ability of more environmentally committed producers to practise a truly alternative form of organic farming (Guthman, 2004b). While these trends are less developed in the UK, Wilson et al. (2022) found that some farmers in the US worried about the certification of regenerative agriculture opening the door to corporate capture.

In contradistinction with organic production, a highly contentious recurring theme lay in the use of herbicides–particularly Glyphosate–among farmers who saw themselves as committed practitioners of regenerative agriculture. Importantly, some of our interviewees argued that in the UK regenerative agriculture without Glyphosate would not be possible, as the herbicide offered the only reliable way to control weeds in a system with little or no ploughing.[7] Developed in the 1970s as a more benevolent alternative to widely used herbicides such as atrazine (banned in the European Union since 2004), the global usage of Glyphosate has increased significantly since the 1990s (Werner et al., 2022). Its widespread application means that its residues are present in much of the environment, even in food produced organically, albeit at much lower concentrations. With Glyphosate close to being banned within the European Union in 2017, recent years have seen the development of a growing body of research detailing concerns around the potential effects of its residues on public health, particularly in diseases associated with gut dysbiosis (e.g. Coeliac disease).[8] Used both prior to planting crops and to remove herbal leys, but also by some farmers to

[6] Note that the distinction between 'conventional' and 'alternative' agriculture has been criticised as an unhelpful dichotomy, lacking analytical value and oversimplifying the diversity of agricultural practices (Sumberg and Giller 2022).

[7] For a discussion of the fraught relationship between 'no-till' farming and Glyphosate, see Müller (2021).

[8] For a review of the evidence, see Puigbò et al. (2022).

help ripen cereals prior to harvest, farmers within our research project argued that the recurrent challenge of dealing with blackgrass and other weeds necessitated the use of Glyphosate:

> 'If Glyphosate were to be banned by government, then this farming system, sustainable agriculture, regenerative conservation … would fall to pieces on a farm like this because there'd be no way to control the blackgrass' (James Jones).

> 'What we don't know is, if they were to ban Glyphosate, we'll probably have to all go back into ploughing, which is going to completely negate what everybody's been trying to do over the years. This is a problem because, to be honest, really there isn't [an alternative] … It's a difficult one because basically, if they banned Glyphosate, you know everybody's plans go out the window basically' (Chris Peel).

Outside of the interviews, concerns around the extensive use of Glyphosate were also raised in the farmer cluster meetings. Emphasising the trade-offs involved in regenerative agriculture, the discussion in one cluster meeting coalesced around the shift towards direct drilling. By some accounts, direct drilling is central to the regenerative agriculture approach. Despite numerous positive outcomes, however, it was also reported to lead to the spread of early succession weeds such as ragwort (leading to continued reliance on Glyphosate). Citing concerns around Glyphosate usage – from the impact on future cover crops, future yields and the 'half-life' of residues within crops – several farmers echoed the sentiment that it was hard to imagine what could possibly replace Glyphosate if it were banned. As a 'catch-22' situation, one of the farmers noted that longer rotations were the only way to deal definitively with weeds without relying on Glyphosate. Yet this practice carried its own short-term economic risks, leading even ardent regenerative agriculture farmers to continue using Glyphosate given the perceived lack of alternatives. Whilst we return to this point in the concluding discussion, we now move on to our final empirical theme.

4.3. Navigating uncertain policy environments

Throughout our interviews, several participants referred to the difficulties associated with navigating an uncertain policy environment in which the 'direction of travel' was difficult to ascertain. Alongside the aforementioned consequences of geopolitical conflict, the transition from the EU's Common Agricultural Policy (CAP) to the new Environmental Land Management (ELMs) scheme was a continual topic of concern. Given that the details of ELMs are, as yet, still unclear, participants noted the difficulties about the payments available under the Sustainable Farming Incentive, Countryside Stewardship and Landscape Recovery schemes alongside the eligibility criteria for different levels of payment under these schemes. Rather than the 'basic payments' that were offered under the CAP which primarily rewarded landowners, these schemes are designed to offer 'public money for public goods'. Yet participants were unclear about what 'goods' were included in this instance.

Some farmers described the new government schemes as 'fiendishly difficult to navigate' (Alastair Chapman & Vic Lee) while others recognised the government's good intentions but criticised its poor delivery (David Morris). Others agreed that ELMs is 'good in theory' but needs 'some element of food production in it' alongside payment for other environmental goods and services (Chris & David Peel). Another felt the government had started off with a good idea but, following pressure from different departments and pressure groups, it had slowly become 'a hotch-potch of ideas' rather than a coherent policy agenda (John Richardson). Amidst widespread criticism from several pressure groups following delays and uncertainty in the roll-out of ELMs, our interviewees' specific concerns about ELMs were reinforced by an underlying mistrust of politicians and policy makers predating Brexit. One farmer was critical of 'uneducated' policy makers with no scientific education: 'They're all PPE students [studying Philosophy, Politics and Economics] who have all been to the same university … a ruling class that's been narrowed down into a particular type of group think' (William Bennett). The same interviewee expressed his active dislike of bureaucrats, described as 'stupid people out with a clipboard' while another riled against 'politicians and council people' epitomised as 'some man in a grey suit behind a big desk' (Bill Ferguson).[9] The figure of an anonymous bureaucrat wielding a clipboard also appeared in our interview with James Jones who said that 'the only people who are going to make money out of ELMs are the bureaucrats and the civil servants … If you want to make money out of ELMs, buy yourself a clipboard and get yourself a job as an inspector'.

In this uncertain policy environment and with many participants relatively new to the regenerative agriculture 'journey', an important topic lay in whom they felt they could trust and what kind of advice they were prepared to follow. One farmer was clear that 'there are no textbooks on how to do this' (Sam Allen) while others felt that 'every day is a school day […] There's always something to learn everyday' (Alastair Chapman & Vic Lee). Our interviewees relied on information from a wide range of sources including formal organizations such as BASE UK, Groundswell, AHDB and RSPB, alongside publications such as Farmer's Weekly. Often such advice was taken in tandem with a range of social media including YouTube, Twitter and (often internationally dispersed) WhatsApp groups.[10] Some sources such as the Game and Wildlife Conservation Trust were regarded as particularly trustworthy, because 'everything they say has been scientifically tested, checked and peer reviewed' (Bill Ferguson). Others relied mainly on their geographically proximate social networks and 'people I know' (James Jones),[11] with many noting the importance of 'looking over the hedge' at their neighbours' practices to provide useful benchmarks.

Interviewees typically combined various kinds of scientific monitoring of their land with a reliance on first-hand knowledge and experience, described by half a dozen farmers as 'walking the fields'. Most were engaged in some kind of environmental monitoring, partly because of their involvement in the H3 project, including yield maps, bird surveys, worm counts etc.[12] As one farmer suggested, 'If you are going to manage, you've got to measure' (Alan White). But many also relied on their intuitive judgements about what was good for their land: 'You do have a sort of gut feeling' (Peter Bennett). One farmer who said he measured yield, soil fertility, mineral content, organic matter, bird counts and more, also insisted that, because of his farming practices and experience, 'I know without having to get someone to tell me … I just know' (William Bennett). Others talked about the importance of embodied knowledge and being connected with the soil:

[9] Naylor et al. (2016: 11) also report a 'deep distrust' of government among their respondents regarding the management of livestock disease in England.

[10] See also Skaalsveen et al. (2020) on the role of farmers' social networks in the implementation of no-till farming practices; Mills et al. (2019) on farmers' use of Twitter to exchange knowledge about sustainable soil management; and Thomas et al. (2020) on farmers' knowledge-sharing practices in the adoption of catchment sensitive farming..

[11] In their work on regenerative agriculture in South-East Spain, Luján Soto et al. (2021) also emphasise the importance of social learning as an important precondition for the uptake of participatory monitoring and evaluation techniques in addressing the challenges of soil degradation.

[12] During the course of our research, and with financial support from the H3 project, some of the farmers in the East of England cluster started to use the Vidacycle 'Soilmentor' app which enables farmers to take various measures of soil quality and display them on a dashboard so they can benchmark the health of their soil and monitor change (https://soils.vidacycle.com/). Marketed as 'the app for regenerative farmers', it can record data on various measures including earthworm counts, soil insect scores, rooting depth and nodulation, rhizosheaths, basal cover transects, carbon stocks, slake tests and infiltration rates.

> 'We've lost the smell, the texture, the senses of soil in the environment … You've got to get out of your cab and smell it. You've got to get your hands in the ground and feel it to understand it. [Farmers, he felt] have become disconnected from our soil […] the life of nature and the seasons' (David Morris).

In sum, whilst the particularly uncertain policy environment characterising this research presented extensive challenges for participants, these perspectives point to the importance of numerous—often informal—sources of information that farmers draw upon when making decisions. Though often referring back to their own intuition to interpret this information, their disavowal of 'traditional' experts and policy actors raises significant questions around the terms on which to engage with farmers interested in changing their practices (Rust et al., 2021).

5. Discussion and conclusion

Drawing on interviews with 21 farmers and farm managers from two farmer clusters in England, this paper has sought to contribute to debates around the adoption of regenerative agricultural practices. In turn, we have sought to situate these developments within wider theoretical debates about changing agricultural paradigms. We suggest that our analysis adds a new perspective to longstanding debates within this journal around the (non-linear and inherently complex) 'shift' from productivism to post-productivism. Whilst in some respects the weight of contemporary interest in regenerative agriculture may lead it to be treated as a distinct paradigm, focusing on soil health, our research reaches more tentative conclusions. As we have established, regenerative agriculture is not 'one thing' in the sense that all who claim to practise it share a common vision or subscribe to an agreed set of practices or principles. This view is consistent both with Gordon et al.'s (2022) suggestion that regenerative discourses are emergent, radically evolving and diverse, as well as with Jaworski et al. (2023) who found diverse combinations of practices considered to represent 'sustainable soil management' by UK farmers. Relatedly, our evidence suggests that there is no single journey or transition towards an agreed destination or end goal. Rather, our participants are engaged in diverse journeys and multiple pathways towards something they identify as regenerative agriculture or, in some cases, simply being a 'good farmer' (cf. Naylor et al., 2018). We therefore suggest that regenerative agriculture may be understood as a 'bundle' of practices adopted in a more piecemeal and pragmatic fashion. Only a couple of our interviewees (Alastair Chapman & Vic Lee) had made a comparatively sudden and wholesale transition to regenerative practices, in their case motivated by their concern for a reliance on (increasingly expensive) inputs. For most participants, it was a more gradual and contingent process of experimentation, reflection and learning, marked by varying degrees of confidence in their interpretation of an uncertain terrain.

Rather than trying to characterise regenerative agriculture as either distinctly productivist or post-productivist, we suggest that it represents a hybrid position seeking to reconcile the inherent tensions between these tendencies. As the experiences of farmers within this research suggest, there is no neat 'break' in the shift from productivism to post-productivism, rather, it is a more modest shift in emphasis (Brouder et al., 2014). In certain respects, the practices of participants can be understood as renewing or re-entrenching thoroughly productivist sentiments, as with the farmers who detailed their economic motives for adopting regenerative practices. In these cases, economic concerns heavily outweigh other (environmental or emotional) motivations, and soil health is firmly pitched as foundational to their farm's 'natural capital' in providing a future base for productivity and profitability. From this perspective, maximising their yields was central. By the same token, these farmers did not lapse into a crude productivism (in the sense of *only* being concerned about production), rather, many of them saw regenerative agriculture as an opportunity to valorise their products within new markets that they envisaged consumers understanding and appreciating (thereby connecting with notions of 'quality' often evoked in post-productivist characterisations, see e.g. Goodman, 2003). Other accounts more strongly orientate to the notion of farming as a vocation in which environmental stewardship is the primary 'public good' generated by, and legacy left by, farmers for the benefit of the wider community. This position in some ways reflects a romanticised view of farming but can also be understood as a rational response to the current policy environment with its growing emphasis on 'public goods' and ecosystem services. Yet this terrain was also a source of frustration, with 'zealots', 'evangelicals', notions of 'witchcraft' and 'madness' used to discuss (and dismiss) others who strayed too close to idealism or exclusivity in their regenerative practices. By and large, however, we note the deeply pragmatic tone to most participants' perspectives. Many spoke of regenerative agriculture simply as representing a form of self-evident 'common sense', allowing them to reduce some inputs to cut costs (e.g. diesel), retain the usage of others (notably Glyphosate) yet still deliver environmental benefits. This was regardless of whether the approach was necessarily formalised in policy agendas or accreditation schemes, which were held at a critical and cautious distance rather than seen to be dictating their decisions.

Whilst these different positions are not necessarily mutually exclusive, with farmers often moving between them, they nonetheless point to the array of drivers and motivations leading to the uptake of regenerative practices. In a certain light, regenerative agriculture can be understood as seeking the 'best of both worlds' across the productivist and post-productivist divide: maximising yields and ensuring profitability whilst benefiting the environment. As previously noted, however, we are cautious of imbuing participants' perspectives with a sense of certainty and clarity that was often absent. In several cases, our interviewees can be seen to be engaged in a challenging balancing act, responding both to an uncertain policy environment and economic conditions in which the question of what agriculture is fundamentally 'for' remains to some extent contested. Meanwhile, in making decisions from one season to another with their eyes on the longer term, several participants wondered if they would in fact manage to strike the 'best of both worlds' later on in their 'journey' into regenerative agriculture.

Our paper also responds to those who call for greater inclusion of farmers in research (MacMillan and Benton, 2014) by listening to their voices and acknowledging the practical wisdom of those who are closest to the ground. Rather than imposing a 'top down' definition of regenerative agriculture, here we have privileged farmers' own interpretation of the situation with the hope that policy actors, tasked with implementing new initiatives such as ELMs, will build on their real-world experiences. Though it is difficult to predict what the future will hold for regenerative agriculture and its practitioners, there remain open questions around the extent to which it appears likely to be 'conventionalised' by policy agendas, co-opted by corporate interests or perhaps relegated to the margins.

Author statement

I confirm that this is an original paper and is not being considered for publication elsewhere.

Declaration of competing interest

None.

Data availability

Data will be made available on request.

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