

The Impacts of the UK Wine Industry on People, Place, and Climate

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ABSTRACT: Climate change has moved the boundary at which viticulture is possible to 49.9°N+ latitude, in the UK this has made commercial wine production both possible and profitable. Triggering a movement in land-use, as vineyards increasingly replace other arable land in England and Wales; a movement of people, as wealthy business professionals return to the land to establish vineyards; and a movement on menus, as English and Welsh wine is stocked at establishments from Weatherspoon's to The Fat Duck. Concurrently, climate change is severely disrupting agricultural production and livelihoods, prompting passionate calls for transformation of the food system systems. Agroecology is a movement that is gaining increasing traction, advocating for a paradigm shift in thinking and practice and offering a pathway to an environmentally sustainable and social just food system. This paper will explore how the UK wine industry and agroecology have respectively moved from positions of ridicule into a space where they are publicly respected. Critically, it will identify what opportunities there are to integrate agroecological thinking and practice in the UK wine industry. This will contribute to the building body of work that is examining how agroecology appears in practice and what it means in different contexts.

A movement in climate and weather patterns has facilitated the ripening of wine grapes in the UK. Subsequently people have been moving into the newly established wine regions: wealthy ex-professionals are returning to the land to establish vineyards and tourists are pursuing mini-breaks and staycations in the UK's wine regions. Concurrently, the very movement that has enabled the growth of the UK industry, climate change, is also causing catastrophic damage prompting calls for a shift towards sustainable agriculture. Ranging from technological adjustments of the conventional food system to an agroecological transformations of the entire food system, this is an increasingly contested field. This article will explore some potential impacts of people investing in and visiting the wine regions, before briefly reviewing two types of sustainability transition and discussing how they relate to the UK wine industry and concluding with some thoughts on how the people moving into the wine industry will influence the type of sustainability transition pursued.

The Movement into Wine

Climate change has moved the boundary at which viticulture, the cultivation of grapes for wine production,

is possible to above 49.9°N+ above latitude. Historically vineyards in the Northern Hemisphere are planted between 30°N and 50°N latitude; it is within these zones the growing season temperature (GST) ripens wine grapes. The UK sits just above 50°N+, as such it was generally considered unsuitable for viticulture (Nesbitt et al. 2016).

Since the 1960s the climate has been changing, in the UK this has increased the average summer temperature and decreased rainfall, pushing the UK climate into a feasible zone for viticulture (Nesbitt et al. 2016). Initially the changes were marginal, affording only the ripening of highly aromatic and acidic Germanic cultivars. Although a novelty these styles did not find widespread appeal, a problem exacerbated by the limited winemaking experience of UK producers (Skelton 2010). As such, the initial commercial success began to wane and by the mid-1990s the UK wine industry had entered a significant decline (Nesbitt et al. 2016). This, however, did not mark the end of the UK's vinous endeavours, the demise of Germanic still wines gave rise to a style with far more commercial viability: high quality sparkling wines, made using the Champagne grapes¹ and in the traditional method (Skelton 2010).

Accelerating climate change enabled the transition to this new style of wine; by the late 1990's and early 2000 GST had increased just enough to successfully ripen the Champagne varieties (Nesbitt et al. 2018). Nyetimber, a producer based across Hampshire and West Sussex, were the first to recognise this potential. In 1997 Nyetimber launched their first traditional method sparkling wine, this received immediate critical acclaim and sold out almost instantly (Skelton 2010) This release was key as it demonstrated the commercial potential of high-quality sparkling wine production in the UK (Skelton 2010).

Since the early 2000's climate change has increased the capacity to ripen commercially interesting grapes across more regions in the UK. This change has been accompanied by the ever-expanding knowledge and skill base of viticulturalist and winemakers (Nesbitt et al. 2018). As such the UK wine industry has witnessed a significant expansion over recent years. It is now the fastest growing agricultural sector in the UK, with approximately 3,500ha currently under vine and a 10 fold growth to 33,700ha² predicted (WineGB 2020, 15; Nesbitt et al. 2016). There are over 800 commercial vineyards in the UK and roughly 190 wineries (Englishwine, n. d). The majority of vineyards are located in England, where the conditions are clement and the extension of the Paris Basin³ gives winemakers claim to the chalk soils of Champagne (WineGB 2020). (See Table 1.) However, other regions have been expanding in recent years, particularly East Anglia,

Wessex, and the West. These regions are also more inclined to trial different grape varieties and production styles, still wine made from the Bacchus grape, for example, is popular across Essex (WineGB 2020).

Region	Percent (%) Total Acreage
Midlands & North	4.0
Thames & Chilterns	3.0
East Anglia	10.0
South East	61.5
Wessex	12.0
West	8.0
Wales	1.5

Table 1. The percent of the total acreage under wine production in England and Wales. (WineGB 2020, 22)

The growth of the UK wine industry is an interesting movement in and of itself, however the movement of people triggered by the growth of the wine industry and the nature of sustainability transitions manifesting within this industry are equally worth discussing.

Return to the Land

Wine, especially high-quality sparkling wine, is a cultural commodity and is linked to elite identity. It is, therefore, perhaps no surprise that the UK wine industry is attracting investment from wealthy individuals (Demossier 2018). Investing in wine is particularly popular with city workers and other wealthy professionals looking to spend their bonuses, or for those with a sizeable trust or retirement fund (Hancock 2018). The UK industry has attracted so much attention it is rivalled only by Napa Valley in terms of the capital being invested. Not only is there a lot riding on the UK becoming the next fine wine region, but the rapid investment of wealth will likely have an impact upon the socio-economic makeup of the newly established wine regions.

Investing in the UK wine industry is a costly and risky move. The unofficial financial advice from the industry is that “to make a million pounds from a vineyard you must start with four” (Kershaw 2018). Lord Ashcroft’s wine investment company, for example, has invested nearly 11m in Gusbourne since 2013. Although producing award winning wines, which are considered some of the best in the UK the business has delivered only losses (Joseph 2021). Admittedly, not all ventures are backed by multi-million pounds of wealth, even at the smallest scale at least £500,000 in upfront investment is needed with at least a 4 year wait before any grapes can be harvested (Savills 2019). The high price of entering the wine industry and lengthy wait for any return on investment (ROI) do not make the UK wine industry unique, these conditions are true of many agricultural sectors. What is unique is that a lot of people are actively choosing to move into this industry, risking everything to establish a 5-hectare estate or

investing vast amounts of money to enter the industry as a major player. As such, establishing a vineyard or winery is considered a “lifestyle-choice” as much as it is a business decision (Drinks Business 2018).

The injection of wealth coupled with the ideals and ambitions of people pursuing a “lifestyle-choice” has implications for rural gentrification, especially “class-based up-scaling” (Halfacree 2018, 2). Winkler and Nicholas illustrated that UK owners have a very positive perception of the contributions of their vineyards to the landscape and territory, however this position is by no means shared by the long-term residents of the regions, who are far more apprehensive about the influx of vineyards (2016). Considering how drastically regions such as Martha’s Vineyard in the USA, Waiheke Island in New Zealand and Margret River in Australia have changed as a result of the growth of a high-quality wine industry this apprehension is perhaps not misplaced. These regions have transitioned through a fairly standard gentrification cycle. As remote outposts in areas of natural beauty they initially attracted attention from bohemian and counter-culture movements, when improved transport links were introduced and the capacity for high quality wine production was realised these regions soon became magnets for wealthy professionals. The growth of the wine industry in these regions replaced other agricultural industries, such as arable crop production, and the associated increase in land prices made it financially untenable for residents to remain (Baragwanath and Lewis 2014).

The rural dynamics of the UK are different from the above-mentioned regions, as such the associated impacts of the expanding wine industry will likely differ. In areas such as the southeast of England “class-based up-scaling” has been well established by commutable links to London, quaint villages and the desirable countryside. Within these regions the growth of the wine industry may create a new stratum of elitism. For example, there may be an increase in the private enterprises catering to the interests of the elite, such as high-end restaurants and shops (Baragwanath and Lewis 2014). While the development in public access infrastructure, such transport or affordable amenities, may remain lacking (Rainer 2016). Areas such as the west of England, Wales and East Anglia which have been less exposed to rural gentrification and the growth of the wine industry is generally at a smaller scale, as such it may bring opportunities for territorial development. This will likely depend upon how the growth of the industry is managed, as the below discussion of tourism illustrates.

Tourism: A Transient Movement

As well as those investing as owners wine regions also attract more transient visitors in the form of tourists; wine is a desirable cultural commodity, through which an idyllic, provincialised representation of place can be experienced (Holland et al. 2014). Furthermore, association to *terroir* and the geographical specificity of

wine give the experience of “consuming place” (Bell 2008, 294). Lifestyle vineyards and wineries are ideally suited to the tourist experience, as these present a view of the industry separated from the pressures of everyday life (Holland et al. 2014). UK wine tourism has grown rapidly, a phenomenon compounded by the pandemic, with wine routes established in many regions and on-site amenities such as tasting rooms, restaurants and accommodation becoming standard (WineGB 2020).

While tourism is often considered a positive for rural development it also has trade-offs; depending upon how it is managed effects people, the environment and communities in different ways. If managed collectively and equitably, tourism has the potential to create public goods, bolster collective identity and ensure the preservation of environmental and cultural resources (Holland et al. 2014; Marlowe and Bauman 2019). Tourism is also key to the economic viability of many smaller wine businesses, it brings lucrative cellar-door sales, builds direct links with customers and diversifies a business strategy (Rainer 2016; Holland et al. 2014; Marlowe and Bauman 2019). Yet, if managed inequitably or purely for private gain, tourism can erode the environment and culture (Holland et al. 2014). There are often ill-considered or unintended consequences from increased traffic (Rainer 2016), to the commodification and co-option of territorial assets (Gómez et al. 2020) and the outpricing of local residents. This is a fairly well hashed debate, with most concluding that the governance mechanisms, infrastructure provisions and distribution of assets determines how tourism is managed (Holland et al. 2014; Marlowe and Bauman 2019).

In relation to the UK wine industry and the impact of tourism it is worth considering the impact upon territorial identity. Wine tourism has the potential to put a place on the map, yet the version of place it is putting on the map may not reflect the totality of the region (Holland et al. 2014). On the one hand, the growth of wine tourism can have a “halo effect”, as other industries and products benefit by virtue of association and from the increase in business bought to a region (Beebe et al. 2013). Yet, the “halo effect” also creates hierarchy and dependencies, while the pedestalling of a particular product means it may come to dominate the identity of a place. Wine in particular has the tendency to define a place, becoming the master label of a region (Baragwanath and Lewis 2014). As with the aforementioned Martha’s Vineyard, Waiheke Island and Margret River, these regions are now known predominantly for wine production (Baragwanath and Lewis 2014). Thus, if wine tourism will put a place on the map, we need to look at what version of place and the extent to which it is created and curated for the tourist experience.

Sustainability Transitions

In the face of the catastrophic, or soon to be, ecological, agrarian, and social crises associated with industrial

agriculture there is a general acceptance that changes in agriculture need to be made. How exactly this change should manifest is a significant point of contention, positioned along ideological and practical lines with vastly different strategies suggested. The business-as-usual logic of the conventional food system is often placed at one end of the spectrum; this approach supports large-scale, monocultural farms, with high-yielding crops and intensive (often chemical) inputs (Roberts 2018). Technological adjustments are made to increase efficiency, often in the form of precision agriculture, nanotechnology, GMO, artificial intelligence and blockchain (Roberts 2018). Change is driven by the rising cost of chemical inputs and increasing environmental regulations, as such the main aim is to maintain the current focus on productivity and profit, whilst reducing environmental impact (Darnhofer 2015; Anderson et al. 2020).

At the other end of the spectrum there are calls for a total transformation of agriculture, the food system and society, such as from agroecology (Darnhofer 2015; McNeill 2019; Levidow 2015). Agroecology considers the looming ecological and social crises a product of the conventional food system, therefore alterations to the current model will not offer the solution. Since the early 20th century agroecology has evolved from “the application of ecology in agriculture” into social, cultural and political domains, representing “agriculture and its relationships with society” (Wezel et al. 2009, 506). In the 1990s agroecological literature begun to connect agroecological practice with food systems transformation, since then multiple visualisations of agroecological transformations have been documented (Altieri 1995; Gliessman 2015b, 2016; Francis et al. 2003; Pimbert 2015; Wezel et al. 2009). The theoretical basis for transformative agroecology is comprehensive and compelling, what is lacking however is a diverse and in-depth analysis of how agroecological transformations can endogenously appear in practice, referred to as scaling-out (horizontally) (Ajates Gonzalez et al, 2018).

If internally agroecology has been developing increasingly transformative ideals, externally it has moved from a position of ridicule to an institutionally recognised and regarded project, marked by the Food and Agriculture Organization (FAO) series of international symposia (Gliessman 2015a; Rosset and Altieri et al. 2017). Referred to as scaling-up (vertically), the expansion of agroecology has provoked “excitement and anxiety” amongst supporters and practitioners of transformative agroecology (Anderson and Maughan 2021, 2). Excitement because agroecology needs to be brought to scale to transform the food system; fear because at this point previous initiatives, such as organics and sustainable intensification, have been stripped of transformative potential (Ferguson et al. 2019; Rivera-Ferre 2018; Levidow et al. 2014). Indeed, something that is already occurring in the institutional and political presentation of agroecology, in which it is a “tool of the

industrial food production” rather than an alternative (Giraldo and Rosset 2018, 545).

Through a reflection upon the Sustainable Wine of Great Britain (SWGB) scheme and the UK wine industries complex relationship with climate change some of the enabling and disabling factors of an agroecological transformation in the UK wine industry will be considered. Prior to this it is worth mentioning a specific barrier to the scaling of agroecology in the UK, which is the institutional and political environment. The UK is economically and politically invested in furthering industrial agriculture, as such, the limited political attention paid to alternatives such as agroecology has promoted a technical view of the practice, “scaling up in name but not in meaning” (Sherwood et al. 2018, 304). The efforts there have been to investigate agroecology have been expert-led and assimilated the practice with sustainable intensification (Ajates Gonzalez et al. 2018). That very “little money went to the support of agroecology” in the UKs development agenda is a further disabling barrier of transformative scaling (CIDCE 2020, 2; Anderson et al. 2019).

Sustainability in the UK Wine Industry

Sustainability certification schemes are ubiquitous across wine regions, especially high-end and quality regions (Pomaricia and Vecchio 2019). The perceived purpose of these schemes can range from the sceptical, in which they represent a marketing ploy to sooth the guilt of luxury consumers, to the more encouraging, in which they illustrate a self-motivated willingness to engage with some of the failings of current systems (Pomaricia and Vecchio 2019). The UK’s own sustainability scheme, SWGB (SWGB n.d) offers insight into the motivations, intentions, and depth of engagement with sustainability within the industry. It should be mentioned that about 30% of wineries and vineyards are currently members of the scheme, therefore this only reveals something about this subset.

Officially launched in 2020 with the first accredited wines released in 2021, SWGB is currently focused on benchmarking and building a “culture of continuous improvement” (WineGB 2020, 22). The aim of the scheme is to “create a strong and vibrant community within the English and Welsh wine industry that actively promotes sustainability through information sharing and a certification scheme that is inclusive, effective and well-respected by our customers” (SWGB n.d). SWGB have created an list of best practice and minimum standard guidelines designed to help all wineries meet their objectives (SWGB n.d).

According to the SWGB literature attaining certification gives producers a “competitive edge in the marketplace” and “improved public relations” (WineGB 2020, 22). It also calls on producers to counter the “catastrophic effects on ourselves, our fellow creatures and

our environment” and take responsibility for their environmental and social impact by introducing “rapid, far-reaching and unprecedented changes in what we do, both in our personal and commercial activities” (WineGB 2020, 22). In addition to the working groups there are 30 founding members, all wineries, who contribute to the design and running of the scheme (SWGB n.d). Members of the working group periodically lead group meetings, write or contribute to information bulletins and provide support to other producers and growers (SWGB RB 2020).

While the aim, guidance, and governance of SWGB aligns with some agroecological principles it does not necessarily signify a complete transformation. The guidelines of the scheme, for example, are only concerned with environmental sustainability and despite calls for far-reaching changes the promise of a competitive edge is still used to sell membership. Furthermore, the transformative ideals of the mission statement will not necessarily translate into practice, as the minimum standards required to achieve certification demonstrate. If and how the SWGB scheme will direct the sustainability transition of the industry remains to be seen. It is fair to observe that a certain group of producers are engaged with sustainability in a way that moves beyond the business-as-usual approach of the conventional food regime.

The Silver-Lining of Climate Change

The final point on this topic is the relationship to climate change often projected onto the UK wine industry, which is considered a “rare beneficiary from the warming planet” (Bawden 2020) and “an example of how climate change could have a positive impact on an outcome” (The CCC 2019, 1). This is important because conditions of crisis give rise to resistances (Giraldo and Rosset 2018), if climate change is enabling, as well as destabilising, will this reduce motivation for resistance?

In magazine and newspaper articles the growth of the UK wine industry is often presented as the “silver-lining” of climate change (Faun 2014), as it “has played straight into the hands of those growing vines in the British Isles” (Johnson and Robinson 2013, 163). These are often reductive, attention-grabbing statements featured in headlines or within the first paragraph or articles. While some sources do go on to address the risks of extreme weather, there is a discernible trend to use the positive climate change narrative as a hook.

The response from academic literature and government reports tends to the more sober, referencing the detrimental effects of frost, flooding, storms, and drought, all of which can severely damage or destroy a crop (Nesbitt et al. 2016). Yet, the impetus to address these risks is because they threaten production and profit, rather than because they form part of a larger, universal problem. Climate change is thus compartmentalised into opportunities (increased GST) and risks (higher chance of

spring frosts) (Giménez and Shattuck 2011; Rickards et al. 2014). This is also reflected in the disconnect with the impact upon other agricultural industries, the heat wave and drought in the summer of 2018 was extremely damaging to a lot of UK agriculture (Bastos et al. 2020). From a viticulture perspective, however, this was considered “a sign of good things to come” (Nesbitt et al. 2019). Similarly, the decrease in production in other wine regions caused by a change in weather patterns, such as Champagne, represents an opportunity for the UK to gain a market advantage (Yeginsu and Peltier 2018). This positions climate change as a “localised, private goods issue” in which there will be inevitable winners and losers (Rickards et al. 2014, 592). An outlook which diminishes the grounds for collective responsibility and condones the practices of the current food regime, making business as usual path of the course.

In all of this the attitude of producers is rarely addressed or investigated, a key consideration that may be affecting practice. Nesbitt et al. found that “64% [of producers] thought climate change was a threat to wine production in the UK; 29% viewed climate change as both a threat and an opportunity, and 7% saw it as an opportunity” (2016, 328). Only 17% of UK producers responded to this voluntary questionnaire, this is therefore a question worth revisiting. Ultimately, vineyard managers and wine makers are dealing first-hand with the impacts of climate change, thus the promise of a “silver-lining” may be diminished by the lived reality. It is possible that the positive climate change narrative is more revealing of the response from society at large, as people desperately cling on to opportunities in the face of an impending catastrophe.

Conclusion: The Meeting of Movements

Climatic change has shifted the boundary at which viticulture is possible to above 50°N, making it possible to produce wine in the UK. This has triggered a movement of people as investors and tourists seek to explore the budding wine industry, in the process impacting the economic and social dynamics of the wine regions. At a larger scale a transition towards more sustainable agriculture is being called for. Proposed strategies range from the technological adjustments of the conventional food regime to calls for an agroecological transformations of the entire food system. The intersection of these two movements will be the consideration of future research, specifically how and in what direction the people attracted to the UK wine industry are pursuing sustainability transitions.

As many owners hail from professional industries they may bring with them business centred ideals and logic, aligning with the productivist mindset of the current food regime (Giménez and Shattuck 2011; Edwards 2008, 32). Alternatively, having an outsider perspective could favour the pursuit of an alternative paradigm, especially as many conventions of the current food regime are not reflected

within the UK wine industry. For example, it is one of the few industries witnessing a growth of small-scale farms (under 5 acres), yields are managed for quality not quantity, expressions of *terroir* connect the product to place and nested, short food supply chains characterise the market. Despite this an agroecological transformation is not necessarily an obvious pathway for the industry; a critical factor being that entering the wine industry is seen as a “lifestyle-choice” whilst the transformative logic of agroecology represents “a way of life” (Hancock 2018; Rosset and Altieri et al. 2017, 17). Thus, the sustainability transitions pursued by wine producers may not align with either the conventional food regime logic or represent an agroecological transformation, but instead reveal a new contending factor in this contested field.

Notes

1. Chardonnay, pinot noir and pinot meunier.
2. An area roughly the same size as the Champagne region.
3. A band of chalk that extends from Northern France to Southeast England.

References

- Ajates Gonzalez, Raquel Jessica Thomas, and Marina Chang. 2018. “Translating Agroecology into Policy: The Case of France and the United Kingdom.” *Sustainability* 10, no. 8 (August): 2930.
- Altieri, Miguel. 1995. *Agroecology: The Science of Sustainable Agriculture*. 2nd ed. Boulder, CO: CRC Press.
- Anderson, Colin Ray, and Molly Anderson. 2020. “Looking Forward: Resources to Inspire a Transformative Agroecology: A Curated Guide.” In *Transformation of Our Food System: The Making of a Paradigm Shift*, edited by H. Herren, B. Haerlin, and IIASTD+10 Advisory Group, 169–180. Berlin: Zukunftsstiftung Landwirtschaft and Biovision.
- Baragwanath, Lucy, and Nicolas Lewis. 2014. “Waiheke Island.” In *Social, Cultural and Economic Impacts of Wine in New Zealand.*, edited by Peter J. Howland, 211–226. London: Routledge.
- Bawden, Tom. 2020. “Britain Could Become a Premier Wine-Growing Region Due to Global Warming.” *I News*, January 27, 2020, <https://inews.co.uk/news/environment/climate-change-britain-south-england-wine-growing-region-global-warming-390761>.
- Beebe, Craig, Farshid Haque, Chelsea Jarvis, Martin Kenney, and Donald Patton. 2013. “Identity Creation and Cluster Construction.” *Journal of Economic Geography* 13, no. 5 (September): 711–40.
- Bell, David. 2008. “Destination Drinking: Toward a Research Agenda on Alcotourism.” *Drugs: Education, Prevention and Policy* 15, no 3: 291–304, <https://doi.org/10.1080/09687630801934089>.
- Darnhofer, Ika. 2015. “Socio-Technical Transitions in Farming: Key Concepts.” In *Transition Pathways*

- Towards Sustainability in Agriculture: Case Studies from Europe*, edited by L. Sutherland, I. Darnhofer, G. A. Wilson, and L. Zagata, 17–31. Wallingford: CABI.
- Demossier, Marion. 2018. *Burgundy: A Global Anthropology of Place and Taste*. New York: Berghahn.
- Edwards, Michael. 2008. *Just Another Emperor? The Myths and Realities of Philanthrocapitalism*. Demos: A Network for Ideas & Action: New York.
- English Wine. n.d. "Vineyards Data." Accessed March 28, 2022. <http://www.englishwine.com/about.htm>.
- Ferguson, Bruce G., Miriam Aldasoro Maya, Omar Giraldo, Terán Giménez Cacho, Mateo Mier y, Helda Morales, and Peter Rosset. 2019. "Special Issue Editorial: What Do We Mean by Agroecological Scaling?" *Agroecology and Sustainable Food Systems* 43, no. 7–8: 722–23. <https://doi.org/10.1080/21683565.2019.1630908>.
- Francis, Charles., Geir. Lieblein, Steven. Gliessman, Tor Arvid. Breland, N. Creamer, R. Harwood, L. Salomonsson, and J. Helenius. 2003. "Agroecology: The Ecology of Food Systems." *Journal of Sustainable Agriculture* 22: 99–118.
- Giraldo, Omar Felipe, and Peter M. Rosset. 2018. "Agroecology as a Territory in Dispute: Between Institutionalization and Social Movements." *Journal of Peasant Studies* 45, no. 3: 545–64. <https://doi.org/10.1080/03066150.2017.1353496>.
- Gliessman, Stephen R. 2015b. *Agroecology: The Ecology of Sustainable Food Systems, Third Edition*. Milton Park: Routledge.
- Gliessman, Stephen R., ed. 2015a. *Agroecology for Food Security and Nutrition: Proceedings of the FAO International Symposium. 18–19 September 2014, Rome, Italy*. Rome: FAO.
- Gómez-Déniz, Emilio, Jorge Pérez-Rodríguez V., and Jos Boza-Chirino. 2020. "Modelling Tourist Expenditure at Origin and Destination." *Tourism Economics* 26, no. 3: 437–60. <https://doi.org/10.1177/1354816619840845>.
- González de Molina, Manuel. 2019. "Political Agroecology Advancing the Transition to Sustainable Food Systems," edited by Paulo Petersen author, Francisco Garrido Peña author, Francisco R. Caporal author and Taylor & Francis. Milton: CRC Press LLC.
- Hancock, Edith. 2018. "The Number of UK Wineries Opening Every Year Has Reached Record Highs." *The Drinks Business*. <https://www.thedrinksbusiness.com/2018/06/the-number-of-uk-wineries-opening-every-year-has-reached-a-new-record/>.
- Holland, Tara, Barry Smit, and Gregory V. Jones. 2014. "Toward a Conceptual Framework of Terroir Tourism: A Case Study of the Prince Edward County, Ontario Wine Region." *Tourism Planning & Development* 11, no.3 (July): 275–91. <https://doi.org/10.1080/21568316.2014.890125>.
- Holt-Giménez, Eric, Raj Patel, and Annie Shattuck. 2009. *Food Rebellions: Crisis and the Hunger for Justice*. Oxford: Fahumu Books and Grassroots International.
- Johnson, Hugh and Jancis Robinson. 2013. *The World Atlas of Wine*. 7th edition. London: Michell Beazley.
- Jones, Gregory, Michael White, Owen Cooper, and Karl Storchmann. 2005. "Climate Change and Global Wine Quality." *Climatic Change* 73: 319–343. <https://doi.org/10.1007/s10584-005-4704-2>.
- Joseph, Robert. 2021. "English Sparkling Wine: Where do We Go from Here?" *Club Oenologique*. March 8, 2021. <https://cluboenologique.com/story/robert-joseph-english-wines-growth-is-unsustainable/>.
- Kershaw, Simon. 2018. "What Price English Wine?" *Pipe and Glass* (blog). March 2018. <https://www.pipeandglass.co.uk/stories/what-price-english-wine>.
- Kime, Faun. 2014. "Champagne May Be in Trouble, But Climate Change Has Sparkling Wine from England on the Rise." *The World*, May 13, 2014. <https://theworld.org/stories/2014-05-13/champagne-may-be-trouble-climate-change-has-sparkling-wine-england-rise>.
- Levidow, Les and Theo Papaioannou. 2018. "Which Inclusive Innovation? Competing Normative Assumptions Around Social Justice." *Innovation and Development* 8, No. 2: 209–26. <https://doi.org/10.1080/2157930X.2017.1351605>.
- Marlowe, Byron, and Matthew Bauman. 2019. "Terroir Tourism: Experiences in Organic Vineyards." *Beverages* 5, no. 2 (April): 30. <https://doi.org/10.3390/beverages5020030>.
- Maughan, Chris, Colin Anderson, and Moya Kneafsey. 2020. "A Five-Point Framework for Reading for Social Justice: A Case Study of Food Policy Discourse in the Context of Brexit Britain." *Journal of Agriculture, Food Systems, and Community Development* 9, no. 3 (May): 1–20.
- McNeill, Desmond. 2019. "The Contested Discourse of Sustainable Agriculture", *Global Policy* 10: 16–27, <https://doi.org/10.1111/1758-5899.12603>.
- Nesbitt, Alistair, Belinda Kemp, Christopher Steele, Andrew Lovett and Stephen Dorling. 2016. "Impact of Recent Climate Change and Weather Variability on the Viability of UK Viticulture – Combining Weather and Climate Records with Producers' Perspectives." *Australian Journal of Grape and Wine Research* 22, no. 2 (June): 324–35.
- Nesbitt, Alistair, Stephen Dorling, and Robert Jones. 2019. "Climate Resilience in the United Kingdom Wine Production Sector: CREWS-UK." *BIO Web of Conferences* 15: 1011.
- Nyéleni 2015: "Declaration of the International Forum for Agroecology, Nyéleni, Mali: 27 February 2015." *Development* 58, no. 2 (June): 163–8.
- Pimbert, Michel. 2015. "Agroecology as an Alternative Vision to Conventional Development and Climate-Smart Agriculture." *Development* 58, no. 2: 286–298.

- Pomarici, Eugenio, and Riccardo Vecchio. 2019. "Will Sustainability Shape the Future Wine Market?" *Wine Economics and Policy* 8, no. 1: 1–4.
- Rainer, Gerhard. 2016. "Constructing Globalized Spaces of Tourism and Leisure: Political Ecologies of the Salta Wine Route (NW-Argentina)." *Journal of Rural Studies* 43 (February): 104–17.
- Rickards, Lauren, Ray Ison, Hartmut Fünfgeld, and John Wiseman. 2014. "Opening and Closing the Future: Climate Change, Adaptation, and Scenario Planning." *Environment and Planning C: Government and Policy* 32, no. 4: 587–602. <http://doi:10.1068/c3204ed>.
- Rivera-Ferre, Marta. 2018. "The Resignification Process of Agroecology: Competing Narratives from Governments, Civil Society and Intergovernmental Organizations." *Agroecology & Sustainable Food Systems* 42, no. 6 (July): 666–85.
- Roberts, Richard J. 2018. "The Nobel Laureates' Campaign Supporting GMOs." *Journal of Innovation and Knowledge* 3, no. 2 (May): 61–65.
- Rosset, Peter, and Miguel Altieri. 2017. *Agroecology: Science and politics*. Rugby: Practical Action Publishing.
- Savills. 2019. "Spotlight: Viticulture in the UK", *Savills* May 1, 2019, https://www.savills.co.uk/research_articles/229130/281784-0/spotlight-viticulture-in-the-uk--may-2019
- Sherwood, Stephen G., Alberto Arce, and Myriam Paredes. 2018. "Affective Labor's 'Unruly Edge': The *Pagus* of Carcelen's Solidarity & Agroecology Fair in Ecuador." *Journal of Rural Studies* 61: 302–13. <https://doi.org/10.1016/j.jrurstud.2018.02.001>.
- Skelton, Stephen. 2010. *UK Vineyards Guide*. London: Stephen Skelton.
- Skelton, Stephen. 2020. "Wine Growing in Great Britain: A Complete Guide to Growing Grapes for Wine Production in Cool Climates." London: Stephen Skelton.
- SWGB. 2020. "WineGB Now has its Own Sustainability Scheme." *WineGB Annual Report*. <https://www.winegb.co.uk/wp-content/uploads/2020/06/SWGB-article-in-Grape-Press-May-2020.pdf>.
- The Committee on Climate Change. 2019. *English Wine – Increased Production and Exports*. Springer International Publishing. <https://www.theccc.org.uk/wp-content/uploads/2019/07/Outcomes-Wine-case-study.pdf>.
- Therond, Olivier, Michel Duru, Jean Roger-Estrade, and Guy Richard. 2017. "A New Analytical Framework of Farming System and Agriculture Model Diversities. A Review." *Agronomy for Sustainable Development* 37, no. 3 (June): 1–24.
- Wezel, Alexander, Stéphane Bellon, Thierry Doré, Charles Francis, Dominique Vallod, and Christopher David. 2009. "Agroecology as a Science, a Movement and a Practice. A Review." *Agronomy for Sustainable Development* 29, no. 4 (October): 503–15.
- WineGB. 2020. "The Grape Press Annual Review." London: WineGB. <https://www.winegb.co.uk/grape-press/>.
- Winkler, Klara J., and Kimberly A. Nicholas. 2016. "More Than Wine: Cultural Ecosystem Services in Vineyard Landscapes in England and California." *Ecological Economics* 124: 86–98, <https://doi.org/10.1016/j.ecolecon.2016.01.013>.
- Yeginsu, Ceylan, and Elian Peltier. 2018. "Praise for English Fizz Provokes Splutters in Champagne." *The New York Times*, December 24, 2018, A6.