Organic Carrots and Conventional Sticks: Commodification, labelling and the case for regulatory de-fetishisation

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Marylynn STECKLEY[1] and Joshua STECKLEY[2]

Abstract

The organic label is the most recognised food label in the world, and consumers perceive organic agriculture as healthier, safer and more sustainable than conventional agriculture. Yet scholars show that both organic and conventional farming systems are diverse, and the purported benefits of organic agriculture are not at all straightforward. At the grocery store, consumers have two options: organic or not. In this paper, we argue that this is a false dichotomy with concerning social and environmental consequences. Processes of commodification obscure the diverse social and ecological conditions under which both organic foods and conventional foods are produced, ultimately positioning 'conventional' production systems and foods as 'other'. This has important implications for conventional agriculture, potentially disincentivising and demotivating producers from adopting environmentally and socially enriching farm management practices.

[1] Global and International Studies, Carleton University, Canada
[2] Department of Political Science, Carleton University, Canada

Corresponding author: Marylynn Steckley, marylynnsteckley@cunet.carleton.ca

Biographical notes

Marylynn Steckley is an Associate Professor in Global and International Studies at Carleton University in Ottawa, Canada, whose research is broadly situated within the field of political ecology, with a focus on food systems.

Joshua Steckley is a Banting Postdoctoral Fellow at Carleton University, whose work is largely grounded in the field of political ecology with a focus on the commodification of nature.

Introduction: a vignette of two 'conventional' farmers

Doreen's farmhouse was difficult to see from the rural road. Her home was custom-designed, and built into the side of a hill, with a mossy 'green roof' that provided further camouflage from a distance. All of her windows faced east to capture the heat and light from the morning sun, which was converted to thermal mass and distributed throughout the house for temperature control. Doreen is primarily a dairy farmer, though she and her husband also cash-crop maize, soy, and wheat, and for a time, experimented with planting truffle-infused oak trees. Her fields, she said, were extremely well managed. "We're in a progressive area, where people learn from each other, and there is quite a bit of pressure from one another" to engage in agronomic practices that protect the land. She planted in the windrows. She had shelterbelts planted between her fields to prevent wind erosion, and she always planted cover crops – rye or vetiver – after each harvest. She diverted cow manure into an aerobic digester, which she said enabled more efficient nutrient uptake than simply spreading manure back on the land. She rarely tilled her land, and if she did, it was minimal and field-specific. "We're not in the mode of ruining the land, because we need it for generations to come." Her goal was not only to simultaneously improve soil health and yields, but also to increase her autonomy in a highly capitalised industry. "The whole idea is to close our loop, so we're not subject to the vagaries of the marketplace."

Doreen's farm and agricultural practices were distinct from those of another farmer we talked to, Nathan. Nathan's farm was more stereotypical of a multigeneration farm in rural southwestern Ontario. His long, straight laneway was lined with tall pines leading to the century-old farmhouse, a barn where he kept 170 cows, and 390 acres of land on which he grew hay (for feed) and other cash crops. He managed the farm himself and mostly relied on family labour. Sometimes he outsourced jobs to 'custom operators' whom he paid to harvest and bale hay, avoiding the cost and maintenance of owning such large machinery. He admitted that he never went to school to learn agronomy or soil science: "I just farm the way Dad taught me." This meant annual ploughing (except for his hay fields), routine glyphosate applications, and substantial applications of commercial fertiliser.

From these brief descriptions, Nathan seemed, more or less, like a high-input 'conventional' farmer, which would make him more dependent on markets to purchase inputs and pay for the services of custom operators. Doreen, by contrast, came off as an agro-ecological farmer, persistently experimenting through trial and error with new management practices to improve her land. In one conversation with Doreen, we made such an assumption when asking about tillage practices: "As an organic and no-till farmer, how do you control weeds?" She responded, almost boastfully, "Oh, I'm not an organic farmer." "So, you spray glyphosate?". Doreen appeared to sense an accusatory tone. "Yeah, definitely. Do we look stupid?" she said sarcastically. Doreen said that "The perception (of herbicide use) is so uninformed." From her perspective, with available technologies and soil mapping she can do "the right thing at the right time in the right amount." Controlled glyphosate application is one of many "strategies" (in addition to cover cropping and hand weeding) that she used to control weeds.

> *The whole thing about organic is a joke. People presume that if you're an organic farmer, you're doing all these right things, but there's people like us who do all the right things, not because we want to be organic but because it's the right thing to do for the soil.*

When we spoke with her, Doreen had just purchased a nearby organic farm to increase her land base. Was she planning on keeping it organic? "Oh, no", she said with conviction, "I hate every square inch of it. The crops are terrible because weeds overcome them, and they're shocking to look at… It's stupid. Anyway, that's my opinion." She was blunt in her judgement of organic agriculture: "I think it's a mug's game. I think it's a joke." We have begun with the stories of Nathan and Doreen, and their apparent juxtaposition, because they highlight the heterogeneity of agricultural production that is often masked by the binary labels of 'conventional' and 'organic'. Neither Nathan nor Doreen is an 'organic' farmer, but does that mean they are both 'conventional'? Many of Doreen's practices align with principles of regenerative and conservation agriculture, but her farm

certainly cannot be considered 'organic'. When Doreen's milk is picked up from her farm, it will be aggregated alongside Nathan's. The milk from their farms will ultimately be processed together, dissolving Doreen's persistent efforts to explore new and diverse agro-ecological practices and creating a homogenous milk commodity. In the grocery store refrigerator, there is 'organic' milk, and everything else. Her milk is with everything else.

But Doreen's farming practices complicate perceptions of conventional agriculture. Organic farming systems are largely perceived to be more environmentally sound, producing foods that are healthier and safer than conventionally produced ones. Because of this, organic labels have a big pull with consumers (Gundala and Singh, 2021; Seufert et al., 2017; Yiridoe et al., 2005). In 2022, global sales of organic products were worth roughly 160 billion USD – an eightfold increase since 2000 – and both sales of organic goods and the total global land areas devoted to organic production have increased year over year (FiBL et al., 2024; Willer et al., 2023). Much research has both lauded and scrutinised organic agriculture: how it is defined, its impact on soils and ecologies, its treatment of workers, and the ideological prestige often imbued upon its mostly middle and upper-class, white consumer base (Guthman, 2011a; Pilgeram, 2012). Yet, Ritchie and Roser argue (2024) (and Doreen would certainly agree), "the common perception that organic food is better by default, or is an ideal way to reduce environmental impact, is a clear misconception." Farming practices in both organic and conventional agricultural systems are diverse and have much to do with: the unique climate, topography, soil type, crop selection, rotational schedule, water availability, soil nutrients, and organic matter in specific sites; as well as the available technologies, capital, and labour, and the particular political and economic frameworks in which they operate (Guthman, 2004a; Sutherland, 2011; van der Ploeg and Ventura, 2014; Veldstra et al., 2014a). The problem, and the focus of this paper, is that when consumers purchase food commodities at the grocery store, productive diversity and heterogeneous farming systems become reduced to a blunt dichotomy between certified organic and, by default, conventional.

Framing agricultural production as either organic or conventional, whether on store shelves or in research, is a problem that goes beyond semantics. From a political ecology perspective, Forsyth (2003) demonstrates that *how* environmental issues are framed shapes perceptions of ecological problems, influencing how research is conducted and how knowledge is established and distributed. Framing agriculture as either 'organic' or conventional has indeed shaped knowledge about food and agriculture in ways that have important and enduring socio-ecological consequences. For example, research has shown that there is a substantial difference between organic production practices and organic certification, such that within the frame of conventional agriculture, many heterogeneous producers around the world engage in ecologically beneficial farm management practices that are often overlooked (Guthman, 2004b), distorting perceptions of conventional agriculture towards negative cultural appraisals (Veldstra et al., 2014a)[1]. Similarly, the blunt distinction between organic and conventional agriculture sets up restrictive productive standards (with associated practices, costs, and penalties) that not only limit the uptake of organic certification but have also led many producers to convert back to conventional practices (Koesling et al., 2012; Rustin, 2015; Sahm et al., 2013). Tied to this, producers who revert to conventional practices often negatively influence conventional farmers from adopting sustainable farming practices (Sahm et al., 2013). Finally, when conventional producers are lumped together, there are often few incentives to invest in environmentally-friendly production methods, and little appreciation for positive incremental improvements in environmental farm practices (Raynolds, 2004; Veldstra et al., 2014a).

The binary between organic and conventional agriculture is established through processes of commodification, ultimately bringing foods to markets with labels that distinguish the organic products from 'other' products for consumers. Commodification is the process of taking qualitatively distinct goods and services from outside of market relations and rendering them commensurable through pricing mechanisms (Castree, 2003; Prudham,

[1] Veldstra (2014a), explicitly documents how producers in the United States who use organic practices, particularly those whose most important consumer base is local, often choose not to obtain organic certification.

2009). In this process, the social relations, ecological practices, and technologies deployed become hidden behind the price tag: a process of *abstraction* whereby "systematic representations dissolve the specificity of things (any specific things) in favour of their aggregation into classes of things" (Prudham, 2009: 129). Doreen's milk is classed and aggregated with Nathan's milk, and it is sold at a common price, even as their relationship to animals, soil, workers, and technologies differ substantially. Through processes of commodification, the distinct characteristics of agricultural products are dissolved, and in their place, products are graded and become standardised goods that are made 'legible' and commensurable to buyers and traders[2] (Cronon, 1991; Prudham, 2009). Marx (1990: 166) refers to such abstraction as "commodity fetishism", where the commodity magically appears as an object for sale, obscuring the relations of exploitation that went into its production. Commodities come to appear as self-contained objects of exchange, without indication of the labour, ecological relations, or social dynamics that shaped them. In the context of this paper, the systems of agricultural production are channelled into categories of either 'organic' or 'conventional' for the consumer, mistakenly presenting commodities with an inherent economic and ideological value detached from the actual socio-ecological practices and relations of production.

Scholars have long emphasised that commodity fetishism is an inevitable consequence of generalised commodity production in capitalist relations (Bernstein and Campling, 2006; Guthman, 2002). In this paper, we build on this literature and argue that the commodification of organic goods and the associated creation of an 'organic' label not only differentiates organic commodities but, by default, labels everything else as non-organic, collapsing diverse, geographical socio-ecological relations of production. Rather than offering a means to 'de-fetishise' agricultural production to give consumers more information about productive processes (Allen and Kovach, 2000), we suggest the organic label inherently homogenises all non-certified organic producers as 'conventional'. This oversimplifies and renders invisible a diversity of production practices and socio-ecological relations (both beneficial and destructive) to create quantifiable and commensurable commodities with important socio-ecological consequences.

In the ensuing sections, we begin by exploring the evolving definitions of organic and conventional agriculture. We then highlight how the comparative literature on organic and conventional agriculture reveals very uneven environmental, labour, and health outcomes not between, but *within* each productive system[3]. We contribute to this literature by examining how the spheres of production and consumption of each productive system are united through processes of commodification. The commodification of both 'organic' and 'conventional' foods obscures food specificities, ultimately creating a binary choice for consumers that conceals the social and ecological relations that underlie production. Finally, we examine organic and conventional agriculture through a lens of commodification, and in doing so, we illuminate potential strategies for moving forward. Specifically, we suggest that rather than focusing on increasing labelling requirements, which require that producers and consumers 'opt-in' through market mechanisms, a more effective way forward is 'regulatory defetishisation'. 'Raising the regulatory floor', we argue, has much potential to mitigate some of the detrimental ecological and social impacts of highly mechanised, agrochemical-input heavy agricultural systems, and is a much more effective form of de-fetishisation than organic labelling.

Defining Organic and Conventional Agriculture: principles and policies

There are important differences between 'organic principles', which are wide and holistic in scope – often overlapping with other terms such as 'regenerative' or 'conservation' agriculture – and organic *regulations,*

[2] William Cronon (1991), for example, documents the example of such grading, categorisation and standardisation, arguing that the abstraction of wheat was fundamental to the expansion of Chicago's wheat market.

[3] We want to emphasise that paying attention to the diverse social and ecological consequences within both organic and conventional productive systems in no way denies the importance of comprehensive research on the negative ecological and social consequences of industrial agricultural practices (i.e. large-scale systems based on monocropping, heavy agro-chemical use, petrol dependence, mechanisation and energy-intensive production, concentrated animal feeding operations, heavy reliance on hybrid and genetically modified seed, corporate integration of food supply chains, and product standardisation). For more on these impacts, readers might explore: McMichael (2022), Moore (2015), Weis (2013, 2007), Montgomery (2012), Foster (2009), Shiva (1991).

which are more limited, specific, and encoded in policy. In 2005, the International Federation of Organic Agriculture (IFOAM)[4] passed a motion to establish a standard definition of organic agriculture *principles*:
A production system that sustains the health of soils, ecosystems, and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation, and science to benefit the shared environment and promote fair relationships and good quality of life for all involved. (IFOAM, 2008)

Across many international and national organisations, organic agriculture is consistently positioned as a holistic production management system that emphasises ecosystem health, biological cycles of production, and environmentally friendly management systems. For example, the United Nations Food and Agriculture Organisation (UNFAO) suggests that organic agriculture "is an integrated production management system that promotes and enhances agroecosystem health, including biodiversity, biological cycles and soil biological activity". It emphasises the use of natural inputs (i.e. minerals and plant-derived products) and discontinuation of the use of synthetic fertilisers and pesticides. Definitions are quite similar in regional and national contexts: that of the African Union (AU), the Association of Southeast Asian Nations (ASEAN), the European Parliament, and the Southern Agricultural Council (CAS) all align closely with the language of the IFOAM (African Union, 2015; ASEAN, n.d.; EUR-Lex and EU, 2018).

To offer some national examples, the National Organic Standard of the United States describes an organic production system as one that "responds to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity (Kuepper, 2010: 18). In Argentina, the National Service of Agriculture and Food Health Quality (SENASA) stipulates that in organic farming, "all the processes which are involved in organic production should be carried out with the purpose of maintaining and increasing the fertility of the soil, using cultural, biological, and mechanical practices, and avoiding the use of chemical products" (USDA Foreign Agricultural Service and Prosperi, 2012). In Canada, the Organic Trade Association (OTA) defines organic principles similarly, with a specific clause stating that 'toxic inputs' are not used. It describes organic agriculture as "a system of farming that replenishes and maintains soil fertility without the use of toxic and persistent pesticides and fertilisers. It encourages practices that increase biodiversity and reduce negative environmental impacts, while also supporting animal health and welfare".

There is substantial convergence in international definitions of organic agriculture, and the influential definition of the IFOAM, in particular, captures many of the 'principles' of organic agriculture that emerged from environmental movements around the world in the 1960s and 1970s, particularly at a time when some organic growers were trying to emphasise the ecological attention they gave to, and promoted in, their production systems (Raynolds, 2004). The problem for consumers (and producers) was to find mechanisms to ensure organic principles were adhered to in practice. Relying on "ecological practices, biodiversity and cycles adapted to local conditions", to take a phrase from the IFOAM organic definition, leaves much open to interpretation, but turning principles into policy has also been hotly debated, and policies to enforce organic practices have evolved unevenly over time and place (Kuepper, 2010; Rigby and Cáceres, 2001).

Alongside the emergence of organic policies, organic certification regimes have developed to verify and control the use of the term "organic" on food labels (Friedland, 2005). In large measure, the impetus for organic certification systems, and the increased reliance on market-based approaches to food system regulation more broadly, has paralleled the declining regulatory authority of governments that accompanied the transition to the neoliberal period[5]. Scholars have documented how the organic label itself is emblematic of the deepening characteristics of neoliberalism in agriculture, including: agro-productive intensification and agro-food product standardisation, the expansion of private property, deepening commodification, and the

[4] The IFOAM is an international member-based umbrella organisation that was founded in 1972.
[5] For more on the emergence of the global trade in organic agro-foods and the historical evolution of organic certification and labels, see: Raynolds (2004), Kononets et al., (2023), and Barton (2018).

extension of global trade networks. Guthman (2007: 457) poignantly emphasised that organic labels, "'devolve' regulatory responsibility to consumers". Within this economic restructuring, the transformation of organic principles into practices and certification systems has fallen short (Goodman, 2000). Specifically, although organic *principles* have been ideologically important and have impacted consumer perceptions of organic agriculture, few have been codified in formal organic regulations today, resulting in 'organic' definitions and labels that are far more constrained. To illustrate, the United States Department of Agriculture's National Organic Program, the Swiss Organic Farming Ordinance, the European Union, and the Japanese Agricultural Standards (JAS) (among others) define *both* organic regulations and principles[6], but regulations tend to be defined by what they prohibit: (most) synthetic pesticides and fertilisers (EUR-Lex and EU, 2018; Kuepper, 2010; MAFF, 2015; Organic Farming Ordinance, 1997; Seufert et al., 2017; Sumberg and Giller, 2022). In Japan and in India, for example, the JAS for Organic Food and the National Programme for Organic Production (NPOP), respectively, stipulate that organic agriculture requires producers to refrain from using chemical fertilisers and pesticides (Government of India and ADEPA, 2024; Miyake and Kohsaka, 2020). In Canada, the Canadian Organic Standards likewise prohibit agro-chemical fertilisers and synthetic pesticides, preservatives and any artificial colours and flavours, genetically modified seeds or ingredients, the use of antibiotics or growth hormones, and sewage sludge (Canadian General Standards Boards, 2018).

The expansion of organic regulations around the world, and attempts at making international definitions of organic uniform, have resulted in extremely narrow legal definitions and regulatory frameworks which miss much of what earlier principles of organic agriculture entailed (Goodman, 2000; Seufert et al., 2017). As there are no enforceable regulations that ensure the principles of, for example, soil conservation or maintaining biodiversity, certified organic agriculture is largely the practice of agriculture without synthetic inputs (defined and codified in varying ways in different jurisdictions). In the academic literature, definitions of organic agriculture also tend to focus on what is avoided. For example, Pimentel et al (2005: 360) define organic agriculture as "a production system that avoids or excludes the use of synthetic[7] chemical fertilisers, pesticides, and growth regulators". If we return to the example of Doreen's farm, we can see how she is following many of the 'principles' of organic agriculture, but her use of herbicides, however minimal and targeted, excludes her from organic certification. Does this mean she is a conventional farmer?

The term 'conventional agriculture' was rarely used before the 1950s, but its use has expanded rapidly since then: first, to describe the industrialisation of post-war farming practices that increasingly relied on external inputs and mechanisation, and later, as a way to define and exemplify what alternative forms of agriculture are *not*. Initially, 'conventional agriculture' was used to refer to 'everyday' widespread practices that were common in the 1950s and 1960s. With the rise of alternative forms of agriculture in the 1970s and 1980s, 'conventional agriculture' started to be used as a category that was compared to organic practices, and then gradually, advocates of alternative farming practices adopted it as a pejorative term (Sumberg and Giller 2022). As a result, conventional agriculture is now loosely defined by what it is *not*: organic agriculture. While organic agriculture is conceptualised as a diversified, self-sustaining, low-input, low-mechanised form of agriculture, conventional agriculture is categorised as ecologically unbalanced, tending to be large-scale, highly capitalised, and based on mono-cropping systems. For example, many definitions of conventional agriculture focus on the normalised use of 'external inputs' (de Ponti et al. 2012) or refer to conventional as 'high-input and commercial' (Seufert et al 2012). Hole et al (2005: 114), for example, define conventional agriculture as being at odds with organic, highlighting that conventional agriculture focuses on productivity and is input-intensive: conventional agriculture is "any non-organic farming system characteristic of a particular farming

[6] These include, among other things: the prevention of contamination, including land boundaries and buffers; biodiversity protection, which can include crop rotation, intercropping or hedgerows; food safety standards, including that livestock manure is composted and minimally applied; the use of organic seed, and 100% organic feed for livestock; and the provision of health care and ethical living conditions and treatment of animals (Kuepper, 2010).

[7] It is worth mentioning that the definition of synthetic and nonsynthetic or 'natural' lack clarity. Some inputs (Chilean nitrate, and sulphur dust, for example) are allowable in some places and not in others, and in many places, debate about what inputs are permitted in organic agriculture have not been fully resolved (Kuepper, 2010).

region where a study took place, and that relies on external inputs to achieve high yields". Ritchie and Roser (2024) similarly equate conventional agriculture with "industrial agriculture" and, like others, define conventional agriculture in opposition to organic agriculture. In their extensive review of the term, Sumberg and Giller (2022: 3) note that this is the simplest way to define conventional agriculture: "not organic plus reliance on external inputs". De Ponti et al (2012: 2) adopt a similar definition suggesting that conventional agriculture is "any agricultural system in which chemical inputs are used"[8]. Critical geographers also tend to define 'conventional' in its relation to 'organic', but do acknowledge and critically assess how the coercive laws of capitalist competition blur the organic/conventional dichotomy. They document how, over time, organic farms increase in size, mechanisation, capitalisation, the use of external inputs (however 'natural'), debt loads, and labour exploitation, all while producing export-oriented crops in competitive national and global markets (Guthman, 2008, 2011b; Konstantinidis, 2018; Sumner and and Llewelyn, 2011). While such critical scholarship addresses the political-ecological dynamics in organic agriculture, the term 'conventional' tends to remain a pejorative catch-all term associated with environmental degradation, agrochemical dependence, large-scale, and mechanised (Sumberg and Giller, 2022). The shifting and multifaceted nature of 'conventional' leads Sumberg and Giller (2022: 2), in a review of the term 'conventional', to suggest that conventional agriculture includes "all that which sits outside any of the self-described alternatives". Other widely cited papers use the term without providing any definition (i.e., Reganold and Wachter, 2016). Friedland (2005: 382) comes to a similar conclusion, saying, "conventional is used to mean non-organic". Although some have pointed out that there is very little research "on what conventional farmers are actually like" and suggest that these are not definitive categories at all (Sutherland, 2013: 430), the process of defining organic agriculture has created a default definition of conventional agriculture. In this process, the diverse farm practices, whether ecologically beneficial or degrading, all fall under the umbrella of 'conventional agriculture'.

Comparative Literature on Organic and Conventional Agriculture

In the past few decades, in both public discourse and scholarly literature, debates about the future of agriculture and the merits of traditional or industrial approaches have tended to be tied up in the juxtaposition of *organic* and *conventional* agriculture (Shennan et al., 2017). For example, while some certainly argue that organic agriculture is environmentally superior to 'conventional' agriculture (Badgley et al., 2007; Gomiero et al., 2011; Kremen and Miles, 2012; Muller, 2009; Reganold and Wachter, 2016), this literature is rife with contention (Seufert and Ramankutty, 2017).

In terms of biodiversity, while some studies suggest that organic farming systems are enriching (Bengtsson et al., 2005; Hole et al., 2005; Underwood et al., 2011), many argue that there are few or inconclusive differences in biodiversity outcomes between conventional and organic systems. Field studies, moreover, differ substantially depending on whether researchers adopt a micro- or macro-environmental scale to ground their analysis (Gabriel et al., 2013; Ritchie and Roser, 2024; Tal, 2018). In terms of air pollution, the impacts of organic and conventional agriculture on greenhouse gas emissions are also difficult to pin down. Organic systems are often significant emitters because they are much less adaptive to no-till or low-till farming, and often rely heavily on tillage (Ritchie and Roser, 2024). When researchers consider crop types, regional variations, and the full life-cycles of products (including farm activities, practices, crop specificities, harvesting, transportation, distribution, and cooking), there are large variations in terms of environmental impacts within organic and conventional agriculture systems. This has led some to emphasise that there are significant environmental benefits of conventional agriculture for certain crops and animals (Clark and Tilman, 2017), While others suggest that certain environmental benefits, like the impact on ozone depletion and climate change, can be ascribed to organic (Boschiero et al., 2023; Mukherjee et al., 2020). Still others argue that when soil carbon is considered, for example, the wide variations in tillage practices and yields[9] *within* organic and conventional farming systems (depending on crops, region, and amendment) complicate claims about potential soil

[8] Notably, none of these definitions include the quantities of external inputs used, nor the frequency or conditions of their use.
[9] Increased yields, a goal of many organic systems, often results in reduced soil carbon. This is important because soil health, soil carbon, and soil carbon sequestering potential are a key part of climate change mitigation (Lorenz et al., 2025).

sequestration possibilities or climate impact differences *between* the systems (Lorenz et al., 2025; Shennan et al., 2017).

As with environmental impacts, the literature related to the differential impacts of organic and conventional agriculture on human health also tends to be more mixed than consumers often believe (Smith-Spangler et al., 2012). One concern is related to findings that agrochemical use on farms increases consumer exposure to persistent pesticide residues on foods (Baker et al., 2002; Clark and Tilman, 2017). Although the health impacts of agrochemical residues require further study (Shennan et al., 2017; Smith-Spangler et al., 2012), many have shown that pesticide residues, where they are found, are well below the defined standards set by the Food and Agriculture Organisation of the United Nations and the World Health Organisation, and do not pose a concern for human health (European Food Safety Authority et al., 2021; Winter and Katz, 2011). The superior purported nutritional quality of organic foods is another pull for consumers, and some studies suggest that organic foods have nutritional advantages: they are more phenol-rich, and have levels of antioxidants and anti-inflammatory compounds compared with non-organic foods (Crinnion, 2010; Jiang et al., 2024; Montgomery and Biklé, 2021). But other studies indicate that there is either insufficient research to identify nutritional differences between organic and conventional agricultural practices or find that there is no difference, specifically beyond phenols (Barański et al., 2017; Cruz-Carrión et al., 2023; Dall'Asta et al., 2020; Dangour et al., 2009; Jensen et al., 2014; Reeve et al., 2016; Smith-Spangler et al., 2012). Nor is there clear data that any nutritional differences found translate to health improvements (Meemken and Qaim, 2018). The impacts of chemical inputs are, however, much more pronounced on farm labourers, particularly in the low-income countries that depend on manual labour (Shennan et al., 2017), and chemical exposure remains a central concern in the literature on agricultural labour (Athukorala et al., 2023; Boedeker et al., 2020; Pluth et al., 2019; Upadhayay et al., 2020; Zanchi et al., 2023).

The conflict and contradictions in the literature result from the diversity of agricultural practices and economic realities, from controlled field trials, natural experiments, and diverse farming practices that are embedded in existing political economies. Part of the problem with this comparative data is related to how organic and conventional are defined (or not defined) and the methodologies used to compare such wide-ranging agricultural systems. Scholars have suggested that comparisons are problematic[10], inconsistent, and have limited value, especially considering how controlled field trials often compare only specific variables or investigate practices or characteristics that may not be common or economically feasible across contexts (der Werf et al., 1997; Kirchmann et al., 2016; Shennan et al., 2017). Others suggest that comparative analyses are weakened when stringent and narrow criteria (around existing soil fertility, crop rotations, and quantification of off-farm inputs) are relied upon to generate data (Kirchmann et al., 2016). Meta-studies, which often include a diversity of single studies to provide a 'big picture', trip up here as well, as they often "lump a wide range of practices together under the labels of conventional and organic, despite the highly variable physical environments of agricultural settings and the wide range of cultivation methods allowed, and soil health achieved, under both farming systems" (Montgomery and Biklé, 2021). So, while some studies suggest organic agriculture has more microbial diversity, biomass, and organic matter (Ghabbour, 2015; Lori et al., 2017), others indicate that when conventional farmers deploy 'conservation' strategies, like reduced tillage and cover crops – often with the aid of herbicides like glysophate – soil life, mass, and activity are maximised (Henneron et al., 2015). The diversity and overlap of conventional and organic practices make categorical comparisons exceedingly complex. As Shennan et al. (2017) emphasise, the wide variation in farm characteristics and practices (i.e. crop choices and requirements, scales and timescales of experiments) makes it very difficult to meaningfully compare the environmental and human health impacts of organic and conventional systems.

There are two other branches of organic/conventional discussions that oversimplify these categories as well. The 'transition to organic' literature, for example, seeks to understand the factors that influence farmers' decisions to take up organic agriculture (Łuczka and Kalinowski, 2020; Rodríguez Castro, 2021; Schneeberger

[10] For example, many experiments that test organic productivity and quality have been done on a small scale that is not necessarily representative of farm functioning in practice.

et al., 2002; Stephenson et al., 2017, 2022), but tends to ignore the high degree of variability both between and within these systems across space. While profitability tends to be higher for organic producers (Crowder and Reganold, 2015), profit margins are significantly influenced by national policies and subsidy programmes (Guthman, 2014; Shennan et al., 2017). State support is key because, while there is some evidence that producers and labourers on organic farms have a higher degree of life satisfaction than those on conventional farms, higher incomes and better working conditions tend to be associated with larger farms (de los Ríos et al., 2016; Harrison and Getz, 2015; Mzoughi, 2014), which often receive disproportionate state subsidies and support (Shennan et al., 2017). There is also significant geographical variability in terms of the overall satisfaction of organic farmers, with growers in high-income countries benefiting from greater profits and higher degrees of satisfaction than those in low-income countries (Shennan et al., 2017). Overall, the benefits of organic certification are geographically variable but tend to exclude low-income producers (Baur et al., 2024). In many places, the cost of organic certification and the time to certification are extremely prohibitive, sometimes insurmountable, and barriers for small farmers (Nelson et al., 2016; Stephenson et al., 2022; Van Hoye, 2017; Zollet and Maharjan, 2021). Even for those who can afford to make the switch to organic agriculture, it is not always beneficial for smallholders. Policymakers and development organisations have received warnings that switching to organic should not be considered a strategy for poverty reduction (Meemken and Qaim, 2018).

Within the 'transition to organic' literature, one prominent discussion seeks to determine how conventional producers can 'go organic' and another is related to how organic production systems are taking on more characteristics of conventional agriculture. The 'conventionalisation thesis' suggests that because organic agriculture is embedded in capitalism, and therefore fundamentally prioritises profit-seeking in a competitive environment, it is increasingly taking on many of the core characteristics of conventional agriculture (Buck et al., 1997; Guthman, 2014; Hall and Mogyorody, 2001; Johnston et al., 2009; Raynolds, 2004). Many contend that 'organic' farms are increasing in size, relying more on off-farm inputs[11], capital, and mechanisation, and lengthening commodity chains, as are their conventional counterparts (Best, 2008; Buck et al., 1997; De Wit and Verhoog, 2007; DeLind, 2000; Guthman, 2014; Lockie and CABI Bioscience UK Centre, 2006). With this in mind, some have suggested that there is a bifurcation within organic agriculture: either a farm gets bigger and more conventional, or it stays small and continues to operate in ways that align with the spirit of early organic principles, like being family-run, engaged in sustainable farm management practices, and avoiding external inputs (Campbell and Liepins, 2001; Coombes and Campbell, 1998; Hall and Mogyorody, 2001). But others show that the results are mixed, and that bifurcation is not always happening (Constance et al., 2008; Darnhofer et al., 2010; Freyer and Bingen, 2015; Guptill, 2009). Despite this, there is broad agreement that most of the early principles of organic agriculture (like the goals of creating alternative, local, environmentally sound food systems that produce whole, unprocessed foods) are often absent or weak, and where they do exist, they are more prominent among large and 'industrialised' organic producers (Constance and Choi, 2010; DeLind, 2000; Friedland, 2005; Lockie and Halpin, 2005; Tovey, 1997). In fact, environmental principles are almost absent from most national organic regulations (Seufert and Ramankutty, 2017), and roughly 40% of organic food is purchased at big box stores, travels long distances, and is highly processed (Kuepper, 2010). As many have pointed out, certified organic products do not guarantee that those products align with organic principles (Darnhofer et al., 2010; Guthman, 2014). Despite the fact that many organic certified producers and foods share characteristics with many conventional producers and foods, scholarship on the 'conventionalisation thesis' continues to use 'conventional' as a pejorative term (Darnhofer et al., 2010).[12] Sometimes this is warranted, but this framing glosses over the complexity and differentiation within 'conventional' agriculture systems, and obfuscates potentially beneficial strategies being used on 'conventional' farms, like no-till practices

[11] Many contend that using inputs that are 'natural' but still external – like livestock manure and organic agro-chemicals – can be environmentally and socially damaging, and run counter to the principles of organic agriculture (De Wit and Verhoog, 2007; McGee and Alvarez, 2016; Tal, 2018).

[12] While there has been some attention to 'pragmatic conventionals', which slightly differentiates conventional producers who have positive attitudes about organic agriculture, or may be organic curious, attention tends to be focussed on the barriers of converting to organic (Constance et al., 2015; Constance and Choi, 2010; Darnhofer et al., 2005).

or cover cropping, which are increasingly popular. Regardless of the uneven impacts and outcomes of organic and conventional agriculture, and despite debates about what 'conventional' organic production systems have become, once products hit the shelves, they tend to be stripped of any nuance. They are ultimately labelled organic or not.

Labels, regulation, and commodity fetishism

There is a significant body of scholarship that explores consumer motivations for purchasing certified organic products and how contemporary consumers perceive organic foods. Much of this work highlights the organic label's 'halo effect', including how organic foods are perceived as higher quality, healthier and more environmentally friendly than conventionally produced foods (Hughner et al., 2007; Jensen et al., 2014), how perceptions of the organic label influence feelings of superiority, altruism and well-being, and how organic labels bias taste preferences among consumers (Küst, 2019; Lanero et al., 2021; van de Grint et al., 2021a; Wan-chen et al., 2013).

Others have explored the disjuncture between the legal meaning of the organic label, which corresponds to specific farming practices, and consumer perceptions of the label, showing that its signification is often misunderstood (Conner and Christy, 2004; Dinçer et al., 2023). Indeed, the confusion surrounding the term 'organic' has been persistent for decades (Chryssochoidis, 2000; Hughner et al., 2007). Friedland (2005: 405) suggests that organic labels are a form of false advertising because "regulations themselves define organic to mean something other than what most consumers think it means". Others also argue that organic labels are a troubling form of market environmentalism and greenwashing (Case, 2018; Morath, 2023; Northen, 2011). Many have also pointed to how organic labelling contributes to social divisions, class inequality, and conspicuous consumption: the higher price point of organic food tends to entail their consumption primarily by moneyed urbanites who differentiate themselves by purchasing organic products (Case, 2018; Fifita et al., 2020; Jakubowska et al., 2025; Johnston et al., 2011; Pineau et al., 2021). In this way, the organic label is an important part of classed food systems, whereby social distinction is sought through the consumption of high-value foods (including organic ones) and is associated with a higher socially proscribed moral value among both consumers and producers (Johnston and Baumann, 2014; Sutherland, 2013). As this prestige value of organic takes hold, conventional producers and consumers, by default, are judged as less virtuous and are implicitly devalued (Cairns et al., 2013; Richetin and Perugini, 2022; van de Grint et al., 2021b). The bifurcation in the food system, between organic foods and everything else, underscores the exclusionary nature of organic labels, privileging a minority of consumers who can afford higher prices while marginalising the majority of those who cannot (Guthman, 2011b; Lockie, 2013; Zukin, 2008).

At the same time, some scholars have argued that labels like 'organic' and 'fair trade' can, at least partially, de-*fetishise* agriculture by revealing the socio-ecological relations obscured by commodification. Allen and Kovach (2000: 221), for example, highlight the potential of organic labelling to de-fetishise agricultural production precisely because it "promotes greater environmental awareness and responsibility among producers and consumers alike" by demystifying the social-ecological relations of production. They are clear that the organic label is not a panacea, acknowledging how organic 'practices' do not always uphold organic 'principles', how regulations can be difficult to enforce, and how labels may contribute to 'greenwashing'. Still, they ultimately conclude that organic labels are a "positive force for environmentalism" (Allen and Kovach, 2000: 221). Hudson and Hudson (2003a: 419) come to a similar conclusion for the 'fair trade' label, which makes the "social and the environmental conditions in which commodities are produced a very visible part of the product". Having a fair-trade label on coffee, for instance, attempts to bridge the gap between producers and far-flung consumers who desire a food commodity that avoids extreme forms of exploitation or environmental degradation. Like the 'organic label,' they suggest such information enables people to act not as isolated consumers but as political actors.

Other scholars are more sceptical, suggesting that labelling strategies merely add a veneer to the commodity

form while sidestepping action for more systemic change (Gunderson, 2014; Guthman, 2007; Hudson and Hudson, 2003b). They argue that organic labels merely perpetuate the *illusion* that environmental harms and social inequalities can be mitigated through consumption. Instead of revealing the socio-ecological relations of production, these labels create an ideological mask that covers the inherent harms of capitalist agriculture by suggesting that ethical consumption can solve systemic problems. In this way, the organic label "acts as a new layer of commodity fetishism that masks the harms of capitalism by convincing society that the harms of capitalism can be rehabilitated with the commodity form itself" (Gunderson, 2014: 110). Such forms of ethical consumerism — or 'voting with your dollars'— shift systemic political advocacy into individual marketplace choices, absolving consumers of broader responsibility. Consumers get to feel "good for having participated in the struggle against suffering!" as Žižek (2010: 117) puts it, likening the premium costs to a payment to absolve the sin of participating in a capitalist food system. Gunderson (2014) argues that such attempts at defetishisation through the organic label create an additional layer of fetishisation that abstracts the production processes, collapsing the heterogeneity of organic agricultural practices into a commodity form that signifies more sustainable and more moral practices. We add to this argument by suggesting the organic label also collapses the heterogeneity of conventional agriculture, creating a 'non-organic other'. The label simultaneously creates both a re-fetishisation of what organic means and, as a corollary, a re-fetishisation of 'conventional' as its ideological opposite. The re-fetishisation of the organic label reinforces the dichotomous myth between organic and conventional agriculture that is presented at the grocery store, through labelling, thus masking the social and ecological conditions of production that underlie both conventional and organic systems.

Future Strategies: label defetishisation and regulatory defetishisation

Based on the above critiques, the first logical step to making agricultural production systems more sustainable may appear, to some, to be to *increase* labelling requirements and provide additional information to consumers. Many suggest that levelling up organic agriculture, including more stringent regulations, or regulations that place more emphasis on a broader set of protections, is at least part of the answer (Muller, 2009; Reganold and Wachter, 2016; Satish et al., 2012; Seufert and Ramankutty, 2017). More labels could further detail the spectrum of agro-ecological production systems that exist within the organic or conventional definitions, providing consumers with more information about the commodities they consume. In many ways, this kind of 'defetishisation through labels' has been the primary strategy for producers to distinguish themselves in the market. There has been a proliferation of food labels that not only focus on the environmental aspects of production practices ('organic,' 'sustainably sourced'), but also labour practices ('fair trade', 'direct trade'), dietary concerns ('certified keto', 'gluten-free'), or animal welfare ('free-range', 'grass-fed', 'certified humane').

Advocating for the proliferation of more fine-grained labels, however, comes with significant drawbacks. Labels are enforced and certified by diverse state institutions, industry coalitions, religious groups, and non-profit organisations, each with different regulations, verification and surveillance mechanisms (Hatanaka et al., 2012; Hatanaka and Busch, 2008). Some labels, like 'organic', are certified through government agencies, while others, like 'certified humane', are created by nongovernmental or charitable organisations (Gaskin and Tedrow, 2020). Meanwhile, labels for 'free range eggs', 'raised without antibiotics', and 'all-natural' are often self-reporting labels with little to no institutional oversight (Bowman et al., 2016). And even when labels are created with standards and oversight, they are often reductive and misleading (Parker et al., 2020). This places much onus on the consumer to decipher what a label signifies about the social and ecological aspects of production, whether it can be trusted, and who is regulating it. 'Label fatigue' denotes the frustration that comes with a plurality of labels and unknown surveillance mechanisms, where consumers are confronted with too many options. It can lead either to political inertia and the uncritical acceptance of the claims (Feucht and Zander, 2017; Goodman, 2004), or to scepticism as regards labelling altogether, when consumers assume (often correctly) that labels largely serve as a marketing mechanism to increase profits through empathetic consumers (Asioli et al., 2020; Hudson and Hudson, 2003a).

Labelling can also be problematic for producers, for whom navigating labyrinthine certification schemes often increases production and administration costs (Hudson and Hudson, 2003b; Seufert and Ramankutty, 2017). If there is to be a greater effort to match organic principles to organic labelling and certification standards, there are likely to be significant challenges for producers. For example, scholars have already pointed to the obstacles that many producers face in complying with current organic standards in many contexts; many illustrate that production costs will most certainly rise, workload and labour needs will be greater, and marketing organic products may prove even more difficult (Sahm et al., 2013). Many have already shown that organic products often exceed the prices consumers are willing to pay, and as prices increase with more stringent organic regulations, consumers will likely seek products with lower standards, and producers will be less inclined to environmentally innovative efforts (Tiboni-Oschilewski et al., 2024). In this way, scholars argue that more stringent labelling often jeopardises the consumer base that can afford the increased prices (Meemken and Qaim, 2018; Tiboni-Oschilewski et al., 2024). For these reasons, scholars suggest that organic labelling, or more stringent organic food labelling, is unlikely to be effective in creating systemic pro-environment and pro-public health change in agro-food production.[13]

We suggest that another significant drawback of the 'more labels' approach is that labels inherently create an abstract 'non-label' that further homogenises commodities despite their heterogeneous socio-ecological relations of production. Messer et al. (2017) offer a compelling example in the case of the 'certified-humane' label, arguing that the label implicitly lumps together other producers as inhumane, though their production practices could be as or more humane than those certified. More broadly, Messler et al. (2017: 417) note that "Labelling some credence characteristics can send a signal to uninformed consumers that they should avoid or be worried about the overall safety of the product". Others have also shown that labels can stigmatise consumer perceptions of the non-labelled 'other' to such an extent that they can come to reject non-labelled goods regardless of price (Kanter et al., 2009). Kanter et al., for example, illustrate that the introduction of the rbST-free milk label spurred significant consumer stigma towards non-labelled milk (Kanter et al., 2009). Ecologically minded producers who do not, or cannot, adhere to labelling requirements are then unable to differentiate themselves from more environmentally destructive producers. This is the pitfall of the organic label as well; everything not labelled 'organic' becomes *de facto* 'conventional'.

A Case for Regulatory Defetishisation

Instead of requiring that producers and consumers opt into or vote with their dollars to support the purported benefits of organic agriculture, we suggest a strategy of *regulatory defetishisation* based on establishing and gradually improving the 'regulatory floor' of production systems which would be geared towards broadening organic agriculture practices across the board. In concrete terms, defetishisation is epistemic and political, and processes of commodity defetishisation expose the labour, power, and ecological relations hidden behind commodities; regulatory floors are institutional and material. Specifically, the concept of a regulatory floor suggests an institutional or governmental regulation that sets a minimal required level of protection or standard and entails that after a standard has been established, no party is able to adopt a less protective or more lenient approach (Buzbee, 2007).

In different domains (for example, related to food safety, genetically modified organisms, and therapeutic goods) many have pointed to the sustainability benefits of establishing a regulatory baseline (Caswell, 1998; Parker et al., 2020; Russo et al., 2023) or what some refer to as a 'regulatory floor' for environmental systems (Lowe et al., 1999; Rizzi et al., 2024). We suggest that establishing a regulatory floor in line with organic principles is valuable for several reasons. First, conceptualising efforts to establish and then gradually improve the 'regulatory floor' allows for regulatory flexibility across contexts. Specifically, goals to establish and/or improve the 'regulatory floor' permit the uptake of diverse pro-environmental regulations, depending on

[13] It should be noted that the prospect of more stringent organic labelling and certification systems does not present a geographically uniform problem of consumer willingness to pay. Rather, willingness to pay for organic goods varies radically by geography, political and economic system, and culture (Grebitus et al., 2016; Tiboni-Oschilewski et al., 2024).

unique socio-political and productive contexts (including dominant crops, pests, policy landscapes, subsidy regimes, government budgets, and labour arrangements). In this sense, countries or regions can establish regulatory floors and gradually adopt regulations depending on their context, allowing for gradual but consistent improvement in agro-productive standards. Second, raising the regulatory floor is a sustainability strategy focussed on improving the least environmentally-sound production systems, rather than enhancing the environmental practices of a select few who 'opt-in' to particularly pro-environment certification systems. Third, in contrast to the fragmented and hazy insights provided by an assortment of labels, establishing a regulatory floor enables opportunity for more consistent, verifiable, and transparent information about *all* agricultural commodities that consumers encounter. Finally, establishing a regulatory floor helps overcome the problem of consumer willingness to pay. If there is low consumer willingness to pay in a particular region, organic labels and certification systems may never take off, but raising the regulatory floor has the potential to ensure a level of food, labour and environmental quality for all consumers.

Overall, a regulatory floor establishes baseline standards that all producers must meet, creating uniform frameworks that ensure consumers can identify and trust product characteristics like safety, animal welfare, environmental impacts, and labour conditions. In this sense, regulatory floors have the potential to translate defetishised knowledge (or awareness of, for example the labour and environmental characteristics of production) into binding regulations that reshape conditions of production. In doing so, they also have the potential to re-embed social relations and ecologies of production back into commodities at the point of production rather than at the point of product interpretation, as is the case with labelling. Regulatory defetishisation also makes defetishisation collective, and compulsory rather than individualistic and voluntary. Unlike voluntary labels, which vary in definition, credibility, and enforcement, mandatory regulations are applied universally and are typically enforced by government agencies. Regulations around agro-chemical use (Hou et al., 2025; Tzilivakis et al., 2021), manure management (De Vries et al., 2015; Liu et al., 2018), animal confinement (Bielza et al., 2025; Estevez, 2007), wind breaks and vegetation clearing (Busck, 2003; Hernandez et al., 2024; Thomas, 2000), water use (IPAC, 2022; Katz, 2013), restrictions on certain imports (CIGS, 2017; Heimann, 2024) and on methane emissions (Searchinger and Waite, 2024), labour laws and worker mobility, production quotas (Augère-Granier, 2021), tillage practices and cover cropping (EU, 2018; Šajn, 2024) are already applied in different jurisdictions around the world[14]. We are not arguing that such regulations, as they currently exist, are sufficient, nor are they immune to many of the critiques cited above. In fact, scholars have also documented some of the challenges that come with regulation, particularly the fact that, to be impactful, they need to be properly implemented and monitored. Regulation must be understood as an ongoing process that must adapt to emerging science and to economic and environmental concerns, and that must also be open to contestation.

Given that regulatory change often results from public pressure and political advocacy, we suggest that refocusing energy on regulatory defetishisation will have more widespread benefits than defetishisation through more labels. Although eco-labels may have their place in certain contexts (Parker et al., 2020), as Veldstra (2014b) emphasises, policy makers and researchers must question the impacts of organic labels, and those who seek to support ecologically-enhancing agro-food production need to clearly distinguish between two possibilities: policies and programmes geared towards increasing practices based on organic *principles*, or towards increasing organic *certification*.

Critical agrarian and food studies scholars suggest that the transformation of our food system towards socially responsible and environmentally enriching production practices, as well as fair processing and retail networks,

[14] Readers may be interested in, for example: the EU Nitrates Directive; pesticide restrictions in China (Hou et al., 2025), regulations on hedgerow protection in Brittain and Denmark (Busck, 2003; Thomas, 2000), manure management regulations in Quebec, Canada (Le and Beaulieu, 2005), restrictions on irrigation and water use in Israel (Katz, 2013), limitations on livestock and poultry densities in the EU, and Israel (Bielza et al., 2025; Estevez, 2007), restrictions on beef imports in Japan (CIGS, 2017), and restrictions on nutrient loading in several state management plans in the US under the Chesapeake Bay Total Maximum Daily Load program (NRC, 2011).

and democratic consumer access to healthy and culturally appropriate foods, requires political action and policy interventions as opposed to individual, voluntary, and market-based choices and incentives. In fact, even scholars who support the ongoing use of ethical food labelling (i.e. organic, fair trade) emphasise that they must be "anchored in broader changes in the regulatory system", and that labels should be used only as part of a broader spectrum of regulations that support ecologically and socially just agro-food production (Parker et al., 2020). As Guthman (2011b: 191) notes, "Eschewing the use of regulatory 'sticks' in ways that might curtail the use of some of the worst materials and practices in agriculture and other industrial production is shameful, too".

Conclusion

Our goal here has not been to deny the benefits of organic agriculture or alternative food production systems, nor to discourage consumers who are a part of such networks. Neither do we intend to elevate conventional practices as pathways to, for example, better conserve soil through zero-tillage and glyphosate use. As the extensive comparisons between 'organic' and 'conventional' agriculture suggest, the practices in each system are heterogeneous and can have ecologically and socially positive or negative impacts, depending on agronomic practices, crop selection, soil type, and climate. In this paper, we argue that the 'organic' label abstracts from these diverse farming practices that are embedded in both organic and conventionally produced foods.

As Darnhoefer (2010: 72) rightly argues, organic farming is ever-changing, in flux and "needs to be understood as dynamic". The same perspective should be attributed to conventional agriculture. Like organic farms, non-organic certified systems are highly diverse, and many producers, like Doreen, are making significant efforts to produce in more environmentally sustainable ways (Veldstra et al., 2014a). Farmers often engage in a range of practices to enhance soil and environmental health, prevent pests and diseases, and often implement sustainable, ecological, or natural methods that dovetail with organic principles (Guthman, 2014; Letourneau and van Bruggen, 2006; Sutherland, 2011; USDA, 2015), and in some instances may have better environmental outcomes (Ritchie and Roser, 2024; Tal, 2018). So-called 'conventional' farmers are also diverse in terms of their mission; they may prioritise soil health over productivity or yield maximisation, and many have goals of self-sufficiency and sustainability (Darnhofer et al., 2005; Harris et al., 2008; Hunt, 2010; Rosin and Campbell, 2009; Shennan et al., 2017; Sutherland, 2011, 2013). It is problematic, as Darnhofer and Bellon (2009: 1) emphasise, that "we know very little about the 'almost organic' groups of farmers". This is critical, given that there is ample evidence that non-organic-certified farmers often engage in environmentally beneficial practices (Sutherland, 2013), with Rosin and Campbell (2009: 151) even suggesting that "conventional agriculture has, to some extent, been subject to organification", and Sutherland (2011) identifying farmers who are "effectively organic".

Despite the heterogeneity of agricultural production systems, the organic label has entailed that the term 'conventional agriculture' has come to have very little practical meaning or analytical value (Sumberg and Giller, 2022), and encompasses both the most destructive, input-intensive industrialised farms as well as some of the most progressive and ecologically-minded ones. Put plainly, 'conventional' producers continue to be associated with industrial agricultural practices. In this way, organic labels serve as a proverbial stick, punishing conventional producers by lumping them together and associating them with industrial agricultural production methods. They simultaneously serve as an important carrot for organic food producers and consumers, often increasing profits and social prestige for certified producers and legitimising both organic producers and foods, though they do so on rocky foundations. In this way, the process of commodification and the mechanism of the organic label construct a mythical dichotomy between organic and conventional agriculture. Through this dichotomy, the particularities of different organic productive systems are erased, and a uniform discourse of organic superiority is expressed to consumers, specifically as a counter-position to conventional agriculture and food. In reality, both organic and conventional cropping systems fall along a "gradient of input use intensity, scale, and diversification of crops and habitat" (Shennan et al., 2017: 319).

The binary of 'organic' and 'conventional', reified through the process of commodification, is problematic because it makes it very difficult for consumers to identify productive practices. The diversity and types of change that are taking place in various non-organic certified agricultural systems around the world deserve more attention. Scholars and policymakers need to move towards a more discerning analysis, away from the two extremes of organic vs. conventional. While more stringent labelling requirements concerning the 'gradients' of agricultural practices, to provide more details for consumers, is being proffered as a solution, raising the regulatory floor – or *regulatory de-fetishisation* – will more systematically minimise destructive practices, support beneficial ones, and offer a more hopeful pathway forward. Regulatory de-fetishisation has the potential to avoid the pitfalls of labelling by ensuring transparency, equity, and accountability without creating a bifurcated food system between those who can afford 'organic' and those who cannot. Raising the regulatory floor could include mandatory on-farm processes that enhance sustainability, for instance crop rotation, plant diversification schemes, the use of cover crops, intercropping, broad testing for pesticide residues, and restrictive levels. It could mean incentivising practices like conservation tillage, native species requirements, and limits on off-farm inputs. In this way, regulations could embed socio-ecological relationships into commodity production through enforceable standards that apply to all. This approach recognises the heterogeneity of production systems while ensuring that all commodities on grocery store shelves abide by a regulatory floor that is persistently improving environmental production, labour conditions, animal welfare, and human health. Political action and mobilisation remain critical in order to perpetually 'raise the bar' to further drive systemic change.

References

African Union (2015) *Ecological Organic Agriculture (EOA) Initiative: Strategic Plan 2015-2025*. Addis Ababa: African Union. Available at: https://eoai-africa.org/wp-content/uploads/2019/08/EOA_StrategicPlan_2015-25Print.pdf

Allen P and Kovach M (2000) The capitalist composition of organic: The potential of markets in fulfilling the promise of organic agriculture. *Agriculture and Human Values*, 17(3), pp. 221–232.

ASEAN (n.d.) *ASEAN Standard for Organic Agriculture (ASOA)*. Jakarta: Association of Southeast Asian Nations.

Asioli D, Aschemann-Witzel J and Nayga RM (2020) Sustainability-related food labels. *Annual Review of Resource Economics*, 12, pp. 171–185.

Athukorala W, Lee BL, Wilson C, et al. (2023) Measuring the impact of pesticide exposure on farmers' health and farm productivity. *Economic Analysis and Policy*, 77, pp. 851–862.

Augère-Granier M-L (2021) *Migrant seasonal workers in the European agricultural sector*. Brussels: European Parliament.

Badgley C, Moghtader J, Quintero E, et al. (2007) Organic agriculture and the global food supply. *Renewable Agriculture and Food Systems*, 22(2), pp. 86–108.

Baker BP, Benbrook CM, Groth E, et al. (2002) Pesticide residues in conventional, integrated pest management (IPM)-grown and organic foods: Insights from three US data sets. *Food Additives and Contaminants*, 19(5), pp. 427–446.

Barański M, Rempelos L, Iversen PO, et al. (2017) Effects of organic food consumption on human health; the jury is still out! *Food & Nutrition Research*, 61(1), 1287333.

Barton GA (2018) *The Global History of Organic Farming*. First edition. Oxford: Oxford University Press.

Baur P, Getz C, Petersen-Rockney M, et al. (2024) Compliance is far from standard: Relational conditions of access and exclusion in agriculture. *Journal of Rural Studies*, 109(Complete).

Bengtsson J, Ahnström J and Weibull A-C (2005) The effects of organic agriculture on biodiversity and abundance: A meta-analysis. *Journal of Applied Ecology*, 42(2), pp. 261–269.

Bernstein H and Campling L (2006) Commodity studies and commodity fetishism II: 'Profits with principles'? *Journal of Agrarian Change*, 6(3), pp. 414–447.

Best H (2008) Organic agriculture and the conventionalization hypothesis: A case study from West Germany. *Agriculture and Human Values*, 25(1), pp. 95–106.

Bielza M, Weiss F, Hristov J, et al. (2025) Impacts of reduced livestock density on European agriculture and the environment. *Agricultural Systems*, 226, 104299.

Boedeker W, Watts M, Clausing P, et al. (2020) The global distribution of acute unintentional pesticide poisoning: Estimations based on a systematic review. *BMC Public Health*, 20(1), 1875.

Boschiero M, De Laurentiis V, Caldeira C, et al. (2023) Comparison of organic and conventional cropping systems: A systematic review of life cycle assessment studies. *Environmental Impact Assessment Review*, 102, 107187.

Bowman M, Marshall KK, Kuchler F, et al. (2016) Raised without antibiotics: Lessons from voluntary labeling of antibiotic use practices in the broiler industry. *American Journal of Agricultural Economics*, 98(2), pp. 622–642.

Buck D, Getz C and Guthman J (1997) From farm to table: The organic vegetable commodity chain of Northern California. *Sociologia Ruralis*, 37(1), pp. 3–20.

Busck AG (2003) Hedgerow planting analysed as a social system – Interaction between farmers and other actors in Denmark. *Journal of Environmental Management*, 68(2), pp. 161–171.

Buzbee WW (2007) Asymmetrical regulation: Risk, preemption, and the floor/ceiling distinction. *New York University Law Review*, 6(82), pp. 1547–1619.

Cairns K, Johnston J and Mackendrick N (2013) Feeding the 'organic child': Mothering through ethical consumption. *Journal of Consumer Culture*, 13(2), pp. 97–118.

Campbell H and Liepins R (2001) Naming organics: Understanding organic standards in New Zealand as a discursive field. *Sociologia Ruralis*, 41(1), pp. 22–39.

Canadian General Standards Board (2018) *Organic Production Systems: General Principles and Management Standards*. Ottawa: Standards Council of Canada; Government of Canada. Available at: https://publications.gc.ca/collections/collection_2018/ongc-cgsb/P29-32-310-2018-eng.pdf

Case AN (2018) *The Organic Profit: Rodale and the Making of Marketplace Environmentalism*. Seattle, WA: University of Washington Press.

Castree N (2003) Commodifying what nature? *Progress in Human Geography*, 27(3).

Caswell JA (1998) How labeling of safety and process attributes affects markets for food. *Agricultural and Resource Economics Review*, 27(2), pp. 151–158.

Chryssochoidis G (2000) Repercussions of consumer confusion for late introduced differentiated products. *European Journal of Marketing*, 34(5/6), pp. 705–722.

CIGS (2017) *Is There Any Problem with Restrictions on Beef Imports?* Available at: https://cigs.canon/en/article/20170824_4454.html (Accessed: 11 November 2025).

Clark M and Tilman D (2017) Comparative analysis of environmental impacts of agricultural production systems, agricultural input efficiency, and food choice. *Environmental Research Letters*, 12(6), 064016.

Conner DS and Christy RD (eds) (2004) The organic label: How to reconcile its meaning with consumer preferences. *Journal of Food Distribution Research*, 35(1), pp. 40–43.

Constance D, Choi J and Lyke-Ho-Gland H (2008) Conventionalization, bifurcation, and quality of life: Certified and non-certified organic farmers in Texas. *Journal of Rural Social Sciences*, 23(1).

Constance DH and Choi JY (2010) Overcoming the barriers to organic adoption in the United States: A look at pragmatic conventional producers in Texas. *Sustainability*, 2(1), pp. 163–188.

Constance DH, Choi JY and Lara D (2015) Engaging the organic conventionalization debate. In: Freyer B and Bingen J (eds) *Re-Thinking Organic Food and Farming in a Changing World*. Dordrecht: Springer, pp. 1–23.

Coombes B and Campbell H (1998) Dependent reproduction of alternative modes of agriculture: Organic farming in New Zealand. *Sociologia Ruralis*, 38(2), pp. 127–145.

Crinnion WJ (2010) Organic foods contain higher levels of certain nutrients, lower levels of pesticides, and may provide health benefits for the consumer. *Alternative Medicine Review*, 15(1), p. 4.

Cronon W (1991) *Nature's Metropolis: Chicago and the Great West*. First edition. New York: W.W. Norton.

Crowder DW and Reganold JP (2015) Financial competitiveness of organic agriculture on a global scale. *Proceedings of the National Academy of Sciences*, 112(24), pp. 7611–7616.

Cruz-Carrión Á, Ruiz de Azua MJ, Muguerza B, et al. (2023) Organic vs. non-organic plant-based foods – A comparative study on phenolic content and antioxidant capacity. *Plants*, 12(1), 183.

Dall'Asta M, Angelino D, Pellegrini N, et al. (2020) The nutritional quality of organic and conventional food products sold in Italy: Results from the Food Labelling of Italian Products (FLIP) study. *Nutrients*, 12(5), 1273.

Dangour AD, Dodhia SK, Hayter A, et al. (2009) Nutritional quality of organic foods: A systematic review. *The American*

Journal of Clinical Nutrition, 90(3), pp. 680–685.

Darnhofer I and Bellon S (2009) WG 2.6: Conventionalisation? Organic farming bites back! Summary of discussions. In: *European Society for Rural Sociology Conference*, Vaasa, Finland. Available at: https://orgprints.org/id/eprint/17124/1/ESRS09_WG26.pdf (Accessed: 10 November 2025).

Darnhofer I, Schneeberger W and Freyer B (2005) Converting or not converting to organic farming in Austria: Farmer types and their rationale. *Agriculture and Human Values*, 22(1), pp. 39–52.

Darnhofer I, Lindenthal T, Bartel-Kratochvil R, et al. (2010) Conventionalisation of organic farming practices: From structural criteria towards an assessment based on organic principles. A review. *Agronomy for Sustainable Development*, 30(1), pp. 67–81.

de los Ríos I, Rivera M and García C (2016) Redefining rural prosperity through social learning in the cooperative sector: 25 years of experience from organic agriculture in Spain. *Land Use Policy*, 54, pp. 85–94.

de Ponti T, Rijk B and van Ittersum MK (2012) The crop yield gap between organic and conventional agriculture. *Agricultural Systems*, 108, pp. 1–9.

De Vries JW, Groenestein CM, Schröder JJ, et al. (2015) Integrated manure management to reduce environmental impact: II. Environmental impact assessment of strategies. *Agricultural Systems*, 138(C), pp. 88–99.

De Wit J and Verhoog H (2007) Organic values and the conventionalization of organic agriculture. *NJAS Wageningen Journal of Life Sciences*, 54(4), pp. 449–462.

DeLind L (2000) Transforming organic agriculture into industrial organic products: Reconsidering national organic standards. *Human Organization*, 59(2), pp. 198–208.

der Werf E van, Kariuki J and Onduru DD (1997) Methodological issues in comparative agro-economic on-farm research assessments of organic versus conventional farming techniques. *Biological Agriculture & Horticulture*, 14(1), pp. 53–69.

Dinçer MAM, Arslan Y, Okutan S, et al. (2023) An inquiry on organic food confusion in the consumer perception: A qualitative perspective. *British Food Journal*, 125(4), pp. 1420–1436.

Estevez I (2007) Density allowances for broilers: Where to set the limits? *Poultry Science*, 86(6), pp. 1265–1272.

EU (2018) Commission Decision (EU) 2018/813 of 14 May 2018 on the sectoral reference document on best environmental management practices. *Official Journal of the European Union*, L 144, pp. 1–38. Available at: http://data.europa.eu/eli/dec/2018/813/2018-06-08 (Accessed: 11 November 2025).

EUR-Lex and EU (2018) Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/2007. *Official Journal of the European Union*, L 150, pp. 1–92.

European Food Safety Authority, Carrasco Cabrera L and Medina Pastor P (2021) The 2019 European Union report on pesticide residues in food. *EFSA Journal*, 19(4), e06491.

Feucht Y and Zander K (2017) Consumers' willingness to pay for climate-friendly food in European countries. In: *System Dynamics and Innovation in Food Networks 2017*, Innsbruck, pp. 360–377. 11th International European Forum (Igls-Forum). Available at: https://ageconsearch.umn.edu/record/258179 (Accessed: 28 May 2025).

FiBL, IFOAM and Organics International (2024) *The World of Organic Agriculture: Statistics and Emerging Trends 2024*. Frick: Research Institute of Organic Agriculture (FiBL) and IFOAM – Organics International. Available at: https://www.fibl.org/fileadmin/documents/shop/1747-organic-world-2024_light.pdf

Fifita 'Ilaitsaane ME, Seo Y, Ko E, et al. (2020) Fashioning organics: Wellbeing, sustainability, and status consumption practices. *Journal of Business Research*, 117, pp. 664–671.

Forsyth T (2003) *Critical Political Ecology: The Politics of Environmental Science*. London: Routledge.

Foster JB (2009) *The Ecological Revolution: Making Peace with the Planet*. New York: Monthly Review Press.

Freyer B and Bingen J (2015) Introduction. In: Freyer B and Bingen J (eds) *Re-Thinking Organic Food and Farming in a Changing World*. Dordrecht: Springer, pp. 1–23.

Friedland MT (2005) You call that organic? – The USDA's misleading food regulations. *New York University Environmental Law Journal*, 13, p. 379.

Gabriel D, Sait SM, Kunin WE, et al. (2013) Food production vs. biodiversity: Comparing organic and conventional agriculture. *Journal of Applied Ecology*, 50(2), pp. 355–364.

Gaskin JW and Tedrow A (2020) *Common Labels and Certifications Used to Market Sustainable Agriculture Products*. Bulletin 1129. Athens, GA: University of Georgia, College of Agricultural and Environmental Sciences. Available at: https://fieldreport.caes.uga.edu/publications/C1129/common-labels-and-certifications-used-to-market-sustainable-agriculture-products/

Ghabbour E (2015) Measuring the total and sequestered organic matter contents of grassland and forest soil profiles in the National Ecological Observatory Network Initiative. *Soil Horizons*. DOI: 10.2136/SH15-07-0014

Gomiero T, Pimentel D and Paoletti MG (2011) Environmental impact of different agricultural management practices: Conventional vs. organic agriculture. *Critical Reviews in Plant Sciences*, 30(1–2), pp. 95–124.

Goodman D (2000) Organic and conventional agriculture: Materializing discourse and agro-ecological managerialism. *Agriculture and Human Values*, 17, pp. 215–219.

Goodman D (2004) Rural Europe redux? Reflections on alternative agro-food networks and paradigm change. *Sociologia Ruralis*, 44(1), pp. 3–16.

Government of India and APEDA (2024) *National Programme for Organic Production (NPOP)*. New Delhi: Agricultural and Processed Food Products Export Development Authority (APEDA). Available at: https://apeda.gov.in/national-programme-for-organic-production-npop (Accessed: 28 October 2025).

Grebitus C, Steiner B and Veeman MM (2016) Paying for sustainability: A cross-cultural analysis of consumers' valuations of food and non-food products labeled for carbon and water footprints. *Journal of Behavioral and Experimental Economics*, 63, pp. 50–58.

Gundala RR and Singh A (2021) What motivates consumers to buy organic foods? Results of an empirical study in the United States. *PLoS ONE*, 16(9), e0257288.

Gunderson R (2014) Problems with the defetishization thesis: Ethical consumerism, alternative food systems, and commodity fetishism. *Agriculture and Human Values*, 31(1), pp. 109–117.

Guptill A (2009) Exploring the conventionalization of organic dairy: Trends and counter-trends in upstate New York. *Agriculture and Human Values*, 26(1), pp. 29–42.

Guthman J (2002) Commodified meanings, meaningful commodities: Re-thinking production–consumption links through the organic system of provision. *Sociologia Ruralis*, 42(4), pp. 295–311.

Guthman J (2004) The trouble with 'organic lite' in California: A rejoinder to the 'conventionalisation' debate. *Sociologia Ruralis*, 44(3), pp. 301–316.

Guthman J (2007) The Polanyian way? Voluntary food labels as neoliberal governance. *Antipode*, 39(3), pp. 456–478.

Guthman J (2008) 'If they only knew': Color blindness and universalism in California alternative food institutions. *The Professional Geographer*, 60(3), pp. 387–397.

Guthman J (2011a) If they only knew: The unbearable whiteness of alternative food. In: Alkon AH and Agyeman J (eds) *Cultivating Food Justice: Race, Class, and Sustainability*. Cambridge, MA: MIT Press, pp. 263–281.

Guthman J (2011b) *Weighing In: Obesity, Food Justice, and the Limits of Capitalism*. Berkeley, CA: University of California

Press.

Guthman J (2014) *Agrarian Dreams: The Paradox of Organic Farming in California*. 2nd ed. Berkeley, CA: University of California Press.

Hall A and Mogyorody V (2001) Organic farmers in Ontario: An examination of the conventionalization argument. *Sociologia Ruralis*, 41(4), pp. 399–322.

Harris F, Robinson GM and Griffiths I (2008) A study of the motivations and influences on farmers' decisions to leave the organic farming sector in the United Kingdom. In: *Sustainable Rural Systems: Sustainable Agriculture and Rural Communities*. Farnham: Ashgate Publishing, pp. 99–111.

Harrison J and Getz C (2015) Farm size and job quality: Mixed-methods studies of hired farm work in California and Wisconsin. *Agriculture and Human Values*, 32(4), pp. 617–634.

Hatanaka M and Busch L (2008) Third-party certification in the global agrifood system: An objective or socially mediated governance mechanism? *Sociologia Ruralis*, 48(1), pp. 73–91.

Hatanaka M, Konefal J and Constance DH (2012) A tripartite standards regime analysis of the contested development of a sustainable agriculture standard. *Agriculture and Human Values*, 29(1), pp. 65–78.

Heimann T (2024) Phasing out palm and soy oil biodiesel in the EU: What is the benefit? *GCB Bioenergy*, 16(1), pp. 1–14.

Henneron L, Bernard L, Hedde M, et al. (2015) Fourteen years of evidence for positive effects of conservation agriculture and organic farming on soil life. *Agronomy for Sustainable Development*, 35(1), pp. 169–181.

Hernandez S, Adams VM and Duce S (2024) The hidden impact of policy changes on remnant vegetation in Queensland, Australia. *Land Use Policy*, 139, pp. 1–9.

Hole DG, Perkins AJ, Wilson JD, et al. (2005) Does organic farming benefit biodiversity? *Biological Conservation*, 122(1), pp. 113–130.

Hou J, Li X, Tang Y, et al. (2025) The impact of environmental regulation on pesticide use in China. *Agriculture*, 15(8), 825.

Hudson I and Hudson M (2003) Removing the veil? Commodity fetishism, fair trade, and the environment. *Organization & Environment*, 16(4), pp. 413–430.

Hughner RS, McDonagh P, Prothero A, et al. (2007) Who are organic food consumers? A compilation and review of why people purchase organic food. *Journal of Consumer Behaviour*, 6(2–3), pp. 94–110.

Hunt L (2010) Interpreting orchardists' talk about their orchards: The good orchardists. *Agriculture and Human Values*, 27(4), pp. 415–426.

IFOAM (2008) *Definition of Organic Agriculture*. IFOAM General Assembly, Vignola, Italy. Available at: https://www.ifoam.bio/why-organic/organic-landmarks/definition-organic

IPAC (2022) *Israel's Sustainable Water Management Plans*. Paris: OECD. Available at: https://www.oecd.org/content/dam/oecd/en/publications/reports/2021/09/ipac-policies-in-practice_1a65968e/israel-s-sustainable-water-management-plans_41895f7a/pdf/israel-s-sustainable-water-management-plans.pdf

Jakubowska D, Grzywińska-Rąpca M and Grzybowska-Brzezińska M (2025) Why do consumers buy organic? Exploring motivations and socio-economic patterns. *Agriculture*, 15(1), 50.

Jensen MM, Jørgensen H and Lauridsen C (2014) Comparison between conventional and organic agriculture in terms of nutritional quality of food – A critical review. *CABI Reviews*, 2013, pp. 1–13.

Jiang B, Pang J, Li J, et al. (2024) The effects of organic food on human health: A systematic review and meta-analysis of population-based studies. *Nutrition Reviews*, 82(9), pp. 1151–1175.

Johnston J and Baumann S (2014) Class and its absence. In: *Foodies: Democracy and Distinction in the Gourmet Foodscape*. New York: Routledge, pp. 195–224.

Johnston J, Biro A and MacKendrick N (2009) Lost in the supermarket: The corporate-organic foodscape and the struggle for food democracy. *Antipode*, 41(3), pp. 509–532.

Johnston J, Szabo M and Rodney A (2011) Good food, good people: Understanding the cultural repertoire of ethical eating. *Journal of Consumer Culture*, 11(3), pp. 293–318.

Kanter C, Messer KD and Kaiser HM (2009) Does production labeling stigmatize conventional milk? *American Journal of Agricultural Economics*, 91(4), pp. 1097–1109.

Katz D (2013) Policies for water demand management in Israel. In: Becker N (ed.) *Water Policy in Israel: Context, Issues and Options*. Dordrecht: Springer Netherlands, pp. 147–163.

Kirchmann H, Kätterer T, Bergström L, et al. (2016) Flaws and criteria for design and evaluation of comparative organic and conventional cropping systems. *Field Crops Research*, 186, pp. 99–106.

Koesling M, Løes A-K, Flaten O, et al. (2012) Farmers' reasons for deregistering from organic farming. *Organic Agriculture*, 2(2), pp. 103–116.

Kononets Y, Konvalina P, Bartos P, et al. (2023) The evolution of organic food certification. *Frontiers in Sustainable Food Systems*, 7.

Konstantinidis C (2018) Capitalism in green disguise: The political economy of organic farming in the European Union. *Review of Radical Political Economics*, 50(4), pp. 830–852.

Kremen C and Miles A (2012) Ecosystem services in biologically diversified versus conventional farming systems: Benefits, externalities, and trade-offs. *Ecology and Society*, 17(4).

Kuepper G (2010) *A Brief Overview of the History and Philosophy of Organic Agriculture*. Poteau, OK: Kerr Center for Sustainable Agriculture.

Küst P (2019) The impact of the organic label halo effect on consumers' quality perceptions, value-in-use and well-being. *Junior Management Science*, 4(2), pp. 241–264.

Lanero A, Vázquez J-L and Sahelices-Pinto C (2021) Halo effect and source credibility in the evaluation of food products identified by third-party certified eco-labels: Can information prevent biased inferences? *Foods*, 10(11), 2512.

Le D and Beaulieu MS (2005) *Factors Leading to the Implementation of Beneficial Management Practices for Manure Management on Canadian Hog Operations*. Catalogue no. 21-601-MIE – No. 074. Ottawa: Statistics Canada Agriculture Division. Available at: https://www150.statcan.gc.ca/n1/pub/21-601-m/21-601-m2005074-eng.pdf (Accessed: 11 November 2025).

Letourneau D and van Bruggen AHC (2006) Crop protection in organic agriculture. In: Kristiansen P, Taji A and Reganold J (eds) *Organic Agriculture: A Global Perspective*. Collingwood: CSIRO, pp. 93–121.

Liu J, Kleinman PJA, Aronsson H, et al. (2018) A review of regulations and guidelines related to winter manure application. *Ambio*, 47(6), pp. 657–670.

Lockie S (2013) Bastions of white privilege? Reflections on the racialization of alternative food networks. *International Journal of Sociology of Agriculture and Food*, 20, pp. 409–418.

Lockie S and CABI Bioscience UK Centre (2006) *Going Organic: Mobilizing Networks for Environmentally Responsible Food Production*. Wallingford: CABI.

Lockie S and Halpin D (2005) The 'conventionalisation' thesis reconsidered: Structural and ideological transformation of Australian organic agriculture. *Sociologia Ruralis*, 45(4), pp. 284–307.

Lorenz K, Omondi E, Lal R, et al. (2025) Soil organic carbon and total nitrogen after 34 years under conventional and organic management practices at the Rodale Institute Farming Systems Trial. *Soil Science Society of America Journal*, 89(1), e14165.

Lori M, Symnaczik S, Mäder P, et al. (2017) Organic farming enhances soil microbial abundance and activity – A meta-analysis and meta-regression. *PLoS ONE*, 12(7), e0180442.

Lowe P, Falconer K, Hodge I, et al. (1999) *Integrating the Environment into CAP Reform*. Newcastle: University of Newcastle, Department of Agricultural Economics and Food Marketing.

Łuczka W and Kalinowski S (2020) Barriers to the development of organic farming: A Polish case study. *Agriculture*, 10(11), 536.

MAFF (2015) *Japanese Agricultural Standard for Organic Products of Plant Origin (JAS-83)*. Tokyo: Ministry of Agriculture, Forestry and Fisheries. Available at: https://www.maff.go.jp/e/policies/standard/specific/attach/pdf/organic_JAS-83.pdf

Marx K (1990) *Capital Volume 1*. London: Penguin Books.

McGee JA and Alvarez C (2016) Sustaining without changing: The metabolic rift of certified organic farming. *Sustainability*, 8(2), 115.

McMichael P and Weber H (2022) *Development and Social Change: A Global Perspective*. Thousand Oaks, CA: Sage Publications.

Meemken E-M and Qaim M (2018) Organic agriculture, food security, and the environment. *Annual Review of Resource Economics*, 10, pp. 39–63.

Messer KD, Costanigro M and Kaiser HM (2017) Labeling food processes: The good, the bad and the ugly. *Applied Economic Perspectives and Policy*, 39(3), pp. 407–427.

Miyake Y and Kohsaka R (2020) History, ethnicity, and policy analysis of organic farming in Japan: When 'nature' was detached from organic. *Journal of Ethnic Foods*, 7(1), 20.

Montgomery DR (2012) *Dirt: The Erosion of Civilizations*. New ed. Berkeley, CA: University of California Press.

Montgomery DR and Biklé A (2021) Soil health and nutrient density: Beyond organic vs. conventional farming. *Frontiers in Sustainable Food Systems*, 5.

Moore J (2015) *Capitalism in the Web of Life*. London: Verso.

Morath SJ (2023) Regulating organic. *American University Law Review*, 73(1), pp. 145–216.

Mukherjee A, Omondi EC, Hepperly PR, et al. (2020) Impacts of organic and conventional management on the nutritional level of vegetables. *Sustainability*, 12(21), 8965.

Muller A (2009) Benefits of organic agriculture as a climate change adaptation and mitigation strategy for developing countries. *Environment for Development Discussion Paper Series*, April, pp. 1–15.

Mzoughi N (2014) Do organic farmers feel happier than conventional ones? An exploratory analysis. *Ecological Economics*, 103, pp. 38–43.

Nelson E, Tovar LG, Gueguen E, et al. (2016) Participatory guarantee systems and the re-imagining of Mexico's organic sector. *Agriculture and Human Values*, 33(2), pp. 373–388.

Northen G (2011) Greenwashing the organic label: Abusive green marketing in an increasingly eco-friendly marketplace. *Journal of Food Law & Policy*, 7, p. 101.

NRC (2011) *Achieving Nutrient and Sediment Reduction Goals in the Chesapeake Bay: An Evaluation of Program Strategies and Implementation*. Washington, DC: National Academies Press.

Organic Farming Ordinance (1997) *The Swiss Federal Council*. Available at: https://www.fedlex.admin.ch/eli/cc/1997/2498_2498_2498/en (Accessed: 28 October 2025).

Parker C, Carey R, Haines F, et al. (2020) Can labelling create transformative food system change for human and planetary health? A case study of meat. *International Journal of Health Policy and Management*, 10(12), pp. 923–933.

Pilgeram R (2012) Social sustainability and the white, nuclear family: Constructions of gender, race, and class at a Northwest farmers' market. *Race, Gender & Class*, 19(1/2), pp. 37–60.

Pimentel D, Hepperly P, Hanson J, et al. (2005) Environmental, energetic, and economic comparisons of organic and conventional farming systems. *BioScience*, 55(7), pp. 573–582.

Pineau C, Williams PL, Brady J, et al. (2021) Exploring experiences of food insecurity, stigma, social exclusion, and shame among women in high-income countries: A narrative review. *Canadian Food Studies*, 8(3), pp. 107–124.

Pluth TB, Zanini LAG and Battisti IDE (2019) Pesticide exposure and cancer: An integrative literature review. *Saúde em Debate*, 43, pp. 906–924.

Prudham S (2009) Commodification. In: Castree N, Demeritt D, Liverman D, et al. (eds) *A Companion to Environmental Geography*. Oxford: Wiley-Blackwell, pp. 123–142.

Raynolds LT (2004) The globalization of organic agro-food networks. *World Development*, 32(5), pp. 725–743.

Reeve JR, Hoagland LA, Villalba JJ, et al. (2016) Organic farming, soil health, and food quality: Considering possible links. In: Sparks DL (ed.) *Advances in Agronomy*, vol. 137. Cambridge, MA: Academic Press, pp. 319–367.

Reganold JP and Wachter JM (2016) Organic agriculture in the twenty-first century. *Nature Plants*, 2(2), pp. 1–8.

Richetin J and Perugini M (2022) The organic diet effect on person perception. *Appetite*, 168, 105696.

Rigby D and Cáceres D (2001) Organic farming and the sustainability of agricultural systems. *Agricultural Systems*, 68(1), pp. 21–40.

Ritchie H and Roser M (2024) Is organic really better for the environment than conventional agriculture? *Our World in Data*, 2 February.

Rizzi M, Gleeson P and Paterson JM (2024) Floors and ceilings: Coordination, coherence and consistency in the relationship between therapeutic goods regulation and consumer protection. *Melbourne University Law Review*, 47(2), pp. 466–509.

Rodríguez Castro L (2021) *Decolonial Feminisms, Power and Place: Sentipensando with Rural Women in Colombia*. New York: Palgrave Macmillan.

Rosin C and Campbell H (2009) Organification: The tendency to assume social and environmental orientations associated with organic production. In: *European Society for Rural Sociology Conference*, Vaasa, Finland. Available at: https://orgprints.org/id/eprint/17124/1/ESRS09_WG26.pdf (Accessed: 10 November 2025).

Russo C, Sansone M, Colamatteo A, et al. (2023) *Sustainability standards: Voluntary versus mandatory regulation*. JRC130619. Luxembourg: European Union. Available at: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC130619/JRC130619_01.pdf

Rustin S (2015) Why are organic farmers across Britain giving up? *The Guardian*, 14 March. Available at: https://www.theguardian.com/environment/2015/mar/14/why-are-organic-farmers-across-britain-giving-up (Accessed: 27 October 2025).

Sahm H, Sanders J, Nieberg H, et al. (2013) Reversion from organic to conventional agriculture: A review. *Renewable Agriculture and Food Systems*, 28(3), pp. 263–275.

Šajn N (2024) *Environment and the Common Agriculture Policy*. Brussels: European Parliament. Available at: https://www.europarl.europa.eu/RegData/etudes/BRIE/2024/762360/EPRS_BRI%282024%29762360_EN.pdf

Satish AB, Swami B and Sengupta B (2012) Barriers to adoption of sustainable agriculture practices: Change agent perspectives. *International Journal of Environmental Sciences*, 3(1), pp. 209–216.

Schneeberger W, Darnhofer I and Eder M (2002) Barriers to the adoption of organic farming by cash-crop producers in Austria. *American Journal of Alternative Agriculture*, 17(1), pp. 24–31.

Searchinger T and Waite R (2024) *Denmark's Groundbreaking Agriculture Climate Policy Sets Strong Example for the World*. Washington, DC: World Resources Institute. Available at: https://concito.dk/en/node/3817 (Accessed: 11 November 2025).

Seufert V and Ramankutty N (2017) Many shades of gray – The context-dependent performance of organic agriculture. *Science Advances*, 3(3), e1602638.

Seufert V, Ramankutty N and Mayerhofer T (2017) What is this thing called organic? – How organic farming is codified in regulations. *Food Policy*, 68, pp. 10–20.

Shennan C, Krupnik TJ, Baird G, et al. (2017) Organic and conventional agriculture: A useful framing? *Annual Review of Environment and Resources*, 42, pp. 317–346.

Shiva V (1991) *The Violence of the Green Revolution: Third World Agriculture, Ecology, and Politics*. London: Zed Books.

Smith-Spangler C, Brandeau ML, Hunter GE, et al. (2012) Are organic foods safer or healthier than conventional alternatives? A systematic review. *Annals of Internal Medicine*, 157(5), pp. 348–366.

Stephenson G, Gwin L, Schreiner C, et al. (2017) *Breaking New Ground: Farmer Perspectives on Organic Transition*. Corvallis, OR: Oregon Tilth and OSU Center for Small Farms & Community Food Systems.

Stephenson G, Gwin L, Schreiner C, et al. (2022) Perspectives on organic transition from transitioning farmers and farmers who decided not to transition. *Renewable Agriculture and Food Systems*, 37(6), pp. 633–643.

Sumberg J and Giller KE (2022) What is 'conventional' agriculture? *Global Food Security*, 32, 100617.

Sumner J and Llewelyn S (2011) Organic solutions? Gender and organic farming in the age of industrial agriculture. *Capitalism Nature Socialism*, 22(1), pp. 100–118.

Sutherland L-A (2011) 'Effectively organic': Environmental gains on conventional farms through the market? *Land Use Policy*, 28(4), pp. 815–824.

Sutherland L-A (2013) Can organic farmers be 'good farmers'? Adding the 'taste of necessity' to the conventionalization debate. *Agriculture and Human Values*, 30(3), pp. 429–441.

Tal A (2018) Making conventional agriculture environmentally friendly: Moving beyond the glorification of organic agriculture and the demonization of conventional agriculture. *Sustainability*, 10(4).

Thomas BA (2000) Do the hedgerow regulations conserve the biodiversity of British hedgerows? *International Journal of Biosciences and the Law*, (2), pp. 67–90.

Tiboni-Oschilewski O, Abarca M, Santa Rosa Pierre F, et al. (2024) Strengths and weaknesses of food eco-labeling: A review. *Frontiers in Nutrition*, 11.

Tovey H (1997) Food, environmentalism and rural sociology: On the organic farming movement in Ireland. *Sociologia Ruralis*, 37(1), pp. 21–37.

Tzilivakis J, Warner DJ, Green A, et al. (2021) A broad-scale spatial analysis of the environmental benefits of fertiliser closed periods implemented under the Nitrates Directive in Europe. *Journal of Environmental Management*, 299, 113674.

Underwood T, McCullum-Gomez C, Harmon A, et al. (2011) Organic agriculture supports biodiversity and sustainable food production. *Journal of Hunger & Environmental Nutrition*, 6(4), pp. 398–423.

Upadhayay J, Rana M, Juyal V, et al. (2020) Impact of pesticide exposure and associated health effects. In: *Pesticides in Crop Production*. Hoboken, NJ: John Wiley & Sons, pp. 69–88.

USDA (2015) *National Organic Farming Handbook*. Washington, DC: United States Department of Agriculture, Natural Resources Conservation Service. Available at: https://www.nrcs.usda.gov/sites/default/files/2022-12/Organic_Farming_Handbook2.pdf

USDA Foreign Agricultural Service and Prosperi ME (2012) *Argentina Organic Products*. Buenos Aires: Global Agricultural Information Network. Available at: https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Organic+Products+-+2012_Buenos+Aires_Argentina_6-8-2012.pdf (Accessed: 28 October 2025).

van de Grint LTM, Evans AM and Stavrova O (2021) Good eats, bad intentions? Reputational costs of organic consumption. *Journal of Environmental Psychology*, 75, 101622.

van der Ploeg JD and Ventura F (2014) Heterogeneity reconsidered. *Current Opinion in Environmental Sustainability*, 8, pp. 23–28.

Van Hoye I (2017) *EIP-AGRI Focus Group New Entrants to Farming: Lessons to Foster Innovation and Entrepreneurship*. Brussels: European Network for Rural Development.

Veldstra MD, Alexander CE and Marshall MI (2014) To certify or not to certify? Separating the organic production and certification decisions. *Food Policy*, 49, pp. 429–436.

Wan-chen JL, Shimizu M, Kniffin KM, et al. (2013) You taste what you see: Do organic labels bias taste perceptions? *Food Quality and Preference*, 29(1), pp. 33–39.

Weis AJ (2007) *The Global Food Economy: The Battle for the Future of Farming*. London: Zed Books.

Weis T (2013) *The Ecological Hoofprint: The Global Burden of Industrial Livestock*. London: Zed Books.

Willer H, Schlatter B and Czech Organic (2023) *The World of Organic Agriculture: Statistics and Emerging Trends 2023*. Frick: Zenodo.

Winter CK and Katz JM (2011) Dietary exposure to pesticide residues from commodities alleged to contain the highest contamination levels. *Journal of Toxicology*, 2011, 589674.

Yiridoe EK, Bonti-Ankomah S and Martin RC (2005) Comparison of consumer perceptions and preference toward organic versus conventionally produced foods: A review and update of the literature. *Renewable Agriculture and Food Systems*, 20(4), pp. 193–205.

Zanchi MM, Marins K and Zamoner A (2023) Could pesticide exposure be implicated in the high incidence rates of depression, anxiety and suicide in farmers? A systematic review. *Environmental Pollution*, 331, 121888.

Zollet S and Maharjan KL (2021) Overcoming the barriers to entry of newcomer sustainable farmers: Insights from the emergence of organic clusters in Japan. *Sustainability*, 13(2), 866.

Zukin S (2008) Consuming authenticity: From outposts of difference to means of exclusion. *Cultural Studies*, 22(5), pp. 724–748.