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What is enlightened agriculture? A multi-normative approach to the nature and values of food production systems

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The sustainable development of farming is an agenda with strong normative undertones, yet beyond the call to combine enhanced agricultural output with better environmental outcomes, this normativity is rarely unpacked or analysed with respect to different worldviews and value systems. The normative practices approach is a values-explicit framework for analysing the normativity of social practices; here it is applied to agriculture to provide a critique of sustainability. This helps to clarify the nature of farming and the breadth of sometimes incommensurable visions for its sustainable intensification. It also leads to a values-explicit concept of “enlightened agriculture”, defined as models for agricultural systems that explicitly realise aesthetic, rural and moral benefits, possibly at some cost to economic productivity. While any implementation of this qualitative definition will be worldview-dependent, it appears that land-sparing approaches and the promotion of biodiversity *per se* are unlikely to qualify as enlightened farming, but farming with concern for the wellbeing of humans and non-humans probably does. The recognition that normative worldviews direct social practices implies that there will be profound diversity among visions of good farming, which technical and political proposals ought to account for. In the face of accelerating global change, this diversity may provide both resilience and fertile grounds for new context-sensitive and community-led initiatives.

KEYWORDS

aesthetics, justice, morality, values, agroecology, farming, sustainable intensification

1. Introduction

The diversity of agricultural systems across the world reflects the foundational role of farming in human culture combined with global variation in climatic and socioeconomic conditions. We cannot simply celebrate this diversity, however. Many agricultural practices correlate with various forms of ill health, poverty and injustice. At the same time, Malthus’ insight about human population growth (Malthus, 1798) colludes with unprecedented rates of environmental change, both locally and globally, to drive ever more-pressing concerns about food security. In this context, a variety of movements adopt the concept of *sustainability* for their diverse visions of how farming practices should adapt and develop at various scales of organisation. But such prescriptions are not simply discovered through scientific work, and there are many different views about how best to farm and how farming should ideally change. This paper presents a simple framework for analysing the normativity of agricultural models. We begin by looking at one preeminent agenda: the agricultural version of sustainable development.

Sustainable intensification is a prominent agricultural policy agenda in the West, the term having appeared in an increasing number of articles almost every year since 2008 and also appearing in the UN Sustainable Development Goals for 2030 (UN Sustainable Development Platform, 2015). While much work has been done on collating metrics for assessing and embedding sustainable intensification in agronomic models (Mouratiadou et al., 2021), alongside numerous exemplifications of how it can be achieved in particular contexts (e.g., Dicks et al., 2019), a precise definition remains elusive, a point that some authors lament (e.g., Lyu et al., 2021). Others uphold the original insistence (Pretty, 1997) that sustainable intensification must be a general policy aim that does not specify precise objectives or techniques—and by implication, cannot be too tightly defined. Loos et al. (2014) and Gunton et al. (2016) expressed concerns that the term might become meaningless if not anchored in a broad enough context. What, then, is sustainable intensification? As an open-ended policy goal, it is clearly a normative concept, taken by its proponents as an unqualified good, while other express scepticism about the “intensification” agenda and sometimes construe the term as an oxymoron (Mahon et al., 2017). Either way, it is a value-laden concept. Yet there is surprisingly little attention to the nature of its values and normativity in the literature to date. What ethics underlie the oft-repeated mantra that we must sustainably intensify agriculture in the coming years, and what values are embedded in the ways in which sustainable intensification is variously construed in terms of “productivity”, “techniques”, “environment”, “biodiversity”, “natural capital”, “needs”, “flourishing”, “justice”, and so on? A framework is clearly needed for clarifying the normative basis of this agenda and charting its values. And the same can be said for visions of sustainable agriculture more generally.

I take as a template the normative practices approach (NPA) that has been developed in recent years for understanding organised social activities (practices) aiming at a recognised good. The NPA was originally outlined for professional practices such as medicine and nursing (Hoogland and Jochemsen, 2000). Since then, it has been philosophically formalised (Jochemsen, 2006) and applied to a wider range of practices (e.g., De Vries, 2015; Jansen et al., 2017; Rademaker and Jochemsen, 2018; Nia et al., 2019). The NPA offers a norms-based characterisation of a social practice combined with an analysis of the diversity of ways in which the practice can be deemed to function well.

In Section 2, I outline the NPA and its application to agriculture. In Section 3, we see how the range of visions of sustainable farming is so broad as to jeopardise the meaning of terms such as sustainable intensification. We then move, in Section 4, to explore how enlightened agriculture can be understood in terms of the NPA as agriculture *opened up* in a range of directions that point beyond its economic nature, according to people’s worldviews and values. Section 5 then focuses on questions about biodiversity and environmental norms. Finally, Section 6 offers conclusions and recommendations.

2. Agriculture as a normative practice

There may be great variation in how much social attention farmers enjoy in different parts of the world, yet it is always

possible to be recognised as a farmer. Such recognition is not purely a matter of social convention, although there are undoubtedly differing views of what successful farming looks like from one culture to another. Farming self-evidently adheres to a number of basic norms, among which we must consider technical proficiency in managing an area of land with its flora and fauna, and economic success in terms of efficient production of a harvest. The first of these is clearly a foundation for the second, yet they are distinct norms. An effective land manager who had no concern for profitability might be better categorised (depending on context) as a park keeper or a hobby gardener; and certainly there are many economic practices that do not depend on good land management and are thus not classified as farming. However, the practice of farming is not exhausted by considering technical proficiency and productive efficiency. A farmer would also, in any culture, have certain analytical skills (e.g., for plant, insect, and disease identification) foundational to his or her technical skills, would follow some linguistic norms when describing the cultivation techniques used or the produce brought to market, and would fulfil a range of social norms of engagement with employees and/or landowners, customers, suppliers, and so on. Such norms will at least be respected as means towards the economic end of farming, but they will also tend to be respected for their own sake, as intrinsically good. A farmer, then, practises the simultaneous realisation of many norms, led by appropriate economic norms. Together these norms characterise farming as a practice, while leaving scope for farmers and policymakers (along with the societies in which they live) to differ in their value systems, determining how the norms are specified, developed, balanced and traded off.

The sketch just given broadly follows accounts in the NPA literature of farming as a normative practice (Rademaker et al., 2017; Rademaker and Jochemsen, 2019). The norm of technical proficiency serves as the “foundational” norm of the practice and the norm of efficient productivity serves as the “qualifying” norm. The other norms are said to be “conditioning” norms, more peripheral but still pertinent. Together, the foundational, qualifying and conditioning norms are said to be *constitutive norms* of the practice. Furthermore, the values and views held by farmers and their societies are said to provide “regulative” norms for the agricultural practice: the ultimate determinants of how farmers actually interpret and live out their role as farmers. We return to these regulative possibilities in the next section.

As will be apparent, the NPA is predicated on a hypothesised structure of normativity. While there may be great variability among cultures concerning, say, social values (e.g., are pride, self-confidence or independence intrinsically good?) or values of justice (e.g., how does equality apply to individuals, families and lineages, and to opportunities vs. outcomes?)—yet there are still basic norms of sociality and justice, among others (cf. De Raad et al., 2017). The theoretical basis for this hypothesis derives from the framework of Reformational philosophy developed by Dooyeweerd (1953b) and Vollenhoven (2005). This tradition posits a sequence of aspects of relational functioning and meaning (Table 1) that can apply to human and non-human life alike. The first aspects in the list, starting with the numerical or quantitative, are the simplest, and each aspect provides conceptual foundations for those that follow, with later aspects in turn providing concepts that can regulate the interpretation of earlier ones. The sixth aspect in

TABLE 1 The aspects proposed by Dooyeweerd and Vollenhoven, with core concepts (often “values”), active forms (“virtues”) and associated goodness attributes (kinds of “value”).

Aspect	Core concept	Example of virtue	Examples of positive (negative) attributed goodness
Ultimate ^a	Commitment	Faithful	Inspiring, sacred (unreliable, sacrilegious)
Moral ^b	Love	Caring	Generous, cherished (mean)
Jural	Justice	Just	Fair, equitable (inappropriate)
Aesthetic	Harmony	Peaceful	Attractive, enjoyable (ugly)
Economic	Productivity	Frugal	Efficient, optimal (wasted)
Social	Relationship	Friendly	Sociable, welcoming (inhospitable)
Lingual	Reference	Literate	Informative, documented (misleading)
Technical	Free control	Competent	Developed, innovative (degraded)
Analytical	Distinction	Intelligent	Distinctive, biodiverse (mixed-up)
Sensory	Perception	Healthy; alert	Health-giving, comfortable (unpleasant)
Biotic	Life	n/a	n/a
Physical	Interaction	n/a	n/a
Kinetic	Change	n/a	n/a
Spatial	Extension	n/a	n/a
Numerical	Quantity	n/a	n/a

The more basic aspects are towards the bottom of the table, the more regulative ones towards the top. ^aThe ultimate aspect was termed “pistic” (derived from the Greek word for faith or trust) by Dooyeweerd, and has also been called “certitudinal” (Clouser, 2005). Its meanings range from religious to mundane, encompassing the concept of trust and conviction at all levels of human life. ^bThe moral aspect is usually termed “ethical” in Reformational philosophy, but this might suggest to some readers a restriction of normative concerns to this aspect alone. Its meaning is focused on loving care, going beyond the demands of justice.

the standard list is termed “sensory” or “psychic”, and introduces the conceptual possibility of valuing, in the sense of desiring (Stafleu, 2007). Thus we can imagine sensitive goodness in the basic animal notion of comfort being better than pain, and from here on in the sequence, each aspect introduces a new dimension of value, or basic norm, as shown in Table 1. Thus, this framework posits an irreducible plurality of around ten basic kinds of norm, offering a form of value-pluralism (Berlin, 1969; Klapwijk, 1994; Martinez-Alier et al., 1998). It is also a relational scheme at various levels. First, each aspect conceptualises a mode of relationship. In the normative aspects, these are value-laden, ranging from relationships of sensory perception (between animals and objects) to relationships of trust and certainty (between people and their objects of trust, whether these be people, other animals, vegetable, or non-living things). Second, these aspectual relationships are themselves the loci of value, precluding the location of value(s) entirely either in the valuing subject or in the valued object. Hence, this scheme supports a form of relational valuing (Knippenberg et al., 2018), albeit without a special category of “relational values” (Norton and Sanbeg, 2021; Gunton et al., 2022; Luque-Lora, 2022). Third, the aspects relate to each other, in that each takes on particular meanings when considered through the lens of another—a point that will become clearer below. The aspects are also helpfully termed “relation-frames” (Stafleu, 1980), but “aspect” is retained for brevity here. Introductions to the Reformational philosophy framework are provided by Clouser (2005), Stafleu (2019), and Basden (2021).

The scale of modes of valuing that arises from this framework can be taken as outlining generic good and bad ways of relational

functioning, for specified kinds of entity, such as humans, or kinds of system, such as farms and the entities within them. Thus, we may distinguish between values as human virtues and values as general attributes of entities and systems and their functioning. In both cases, values discourse is taken to refer to a plurality of forms of goodness.

We are now ready to look at the possibilities for agriculture to be developed within and beyond the structure afforded by its constitutive norms. In the next section we look at the enhancement of agriculture within the norms already considered, and in the following section we explore how different farming systems are opened up to post-economic norms.

3. Developing sustainable agriculture: a diversity of agendas

Sustainable agriculture covers a wide range of more specific agendas. Plumecocq et al. (2018) sketch a typology of sustainable agriculture models ranging from the technology-intensive and efficiency-driven through to the biodiversity-based and territorially-embedded. Conventional intensive agriculture is often seen at one end of such a spectrum, yet much of the technical efficiency focus inherited from the Green Revolution is intensified in visions of a new agricultural revolution (Barrett and Rose, 2022) evoked with the term “Agriculture 4.0” (Liu et al., 2021), in which contemporary technological advances are expected to bring a step-change in productivity. Such emerging technologies are emphasised as robotics, the Internet of Things, blockchain

accounting, artificial intelligence and big data analytics—and indeed, data-driven farming has already now been branded “Agriculture 5.0” (Saiz-Rubio and Rovira-Más, 2020). Moving the other way along the spectrum, ecological intensification (Bommarco et al., 2013) and the search for nature-based solutions (Hrabanski and Le Coq, 2022) grade into an agroecology agenda (Gliessman, 1990; Côte et al., 2022), organic farming (Darnhofer et al., 2010), and forms of localised, biodiversity-based farming (Duru et al., 2015).

Although they could hardly be more different on the ground, all such visions share a vision for enhancing some version of productivity through some kind of technical means, in line with the qualifying and foundational norms of farming as identified in the NPA. Farming, by its very nature, concerns productive techniques—and indeed, this was the simple early focus of sustainable intensification on improving yields in southern African agriculture without wasting resources (Reardon et al., 1997). Sustainability in this narrow sense is itself an economic norm. However, contemporary visions for sustainable farming—including sustainable intensification as it has evolved—invariably make reference to environmental impacts and benefits. “Environment” is one of the three main pillars considered in sustainable development discourse (e.g., UN Sustainable Development Platform, 2015), alongside economic and social concerns. Agriculture seems to be intrinsically an environmental practice, and the question of environmental norms turns out to be a useful one for discerning divergent visions of sustainability. But vague reference to environmental concerns merely confuses matters, as we shall now see.

The concept of the environment is critiqued from postcolonial perspectives as supporting a human-vs-nature dualism (Strang, 2005; Wirzba, 2021; 108–109). Originally referring to what surrounds a focal entity or system, “the environment” evokes that which is external to us (our environs). This cannot be a general feature or aspect of reality, still less a basic good. In economics, externalities are indirect costs or benefits that are not accounted for in the analysis of a firm’s operations—which commonly include impacts on ecosystems, but also wider physical, social and other impacts. By this approach, taking “environmental” norms as external concerns would conflate a range of different aspects (Wigboldus and Jochemsen, 2021), and respecting them might tend to lead to some kind of land-sparing policy of arable intensification (Fischer et al., 2014). Alternatively, a strongly anthropocentric view takes “environment” to mean non-human ecosystems, or what is often called “nature”—but then the case of agriculture is problematic. Farming is the management of agroecosystems, so the ecological (or “natural”) environment of a farm is continuous with the farm itself. By this approach, “environmental” as ecological concerns might best be mitigated through something like permaculture (Luna, 2022), which makes cropland more similar to unmanaged habitats. We revisit these ideas in Section 5.

For now, we note that while reference to environmental concerns in agricultural discourse is ubiquitous, it does not give clear information about the kind of sustainability envisioned. At a minimum, it may simply refer to better practice in the local medium-term internal business interests of farming. Yet it may

also signal global and long-term ecological concerns. Something similar could also be said of social concerns: “social sustainability” may refer to local socio-economic conditions subservient to maintaining and enhancing agricultural productivity—or it could be expanded to take in participatory development and wider social justice concerns (Rose et al., 2021). A NPA perspective on these possibilities is offered in the next section. At stake is the distinction between transitions that are economically led and those that are ethically led.

Thus, sustainability discourse includes visions for intensification of a strongly technological and economic character, of the sort advocated in Agriculture 4.0 (or 5.0), as well as accommodating concerns for social and ecological responsibility, recognising a more advanced normative scope. The wider normative dimensions of agriculture tend to be overlooked in the economic focus on intensification, and a shift towards broader notions of sustainability demands normative clarity. At its most advanced, sustainable farming may be construed as “agriculture-plus” or enlightened agriculture: a holistic, context-sensitive vision of farming in which there are no externalities.

4. Enlightened agriculture: Farming opened up

As outlined above, the NPA identifies several norms that are constitutive of farming, including a founding norm (technical control) and a qualifying norm (economic productivity) while taking in a number of conditioning norms (sensory, analytical, lingual, and social). These leave ample space for variations in ideals for farming among people and cultures, but the NPA offers further normative structure, enabling farming practices to be oriented with regard to higher or external norms concerning the motivations and context of farming. Recalling the concept of externalities in economics and the distinction between market and non-market value (Jones and Tobin, 2018), we make a distinction between the “internal functions” and “external relationships” of an institution or practice (Chaplin, 2007). We have already seen how some possible visions for sustainability can be confined to the internal functions of the practice of agriculture, pursuing efficient productivity, with ecological, and social considerations largely subservient to this end. We now look at how the external relationships of farming open up agricultural systems towards broader personal and societal aspirations, and how analysing this *opening up* can clarify the normative qualities of particular visions and agendas for agriculture.

Four normative aspects come after the economic aspect in the sequence of aspects proposed by Dooyeweerd (1953a,b) and Vollenhoven (2005) (Table 1): aesthetic, jural, moral, and ultimate. We will return to the first three of these after considering how the ultimate aspect has a special role in the NPA. This aspect concerns worldviews, including people’s fundamental convictions about what is good, which tend to shape and regulate the ways in which all earlier norms are specified and interpreted. While, for example, the qualifying norm of a business is economic and the qualifying norm of a government is jural, the qualifying norm of human beings *per se* lies in this ultimate aspect (also termed the certitudinal or

pistic aspect), in that ideological or religious worldviews are an ultimate, regulating feature of human life. This has both a personal and a communal dimension, as people's views are shaped by the visions of communities of discourse and practice. Thus, on the *regulative* or *directional* side of farming, the NPA requires us to consider the worldviews and ideologies in operation where visions of sustainability are pursued (Rademaker et al., 2017).

Farming, like all human practices, always has a regulative side. Farmers naturally have visions of the meaning and purpose of farming, whether this be business success, land stewardship, communal welfare, or some kind of religious observance. Similarly, scientists undertake agricultural research and development with various personal motivations; and policymakers pursue goals in the grip of some ideology or other. However, we are concerned here with models or systems for farming: ideals stated in general terms that may or may not acknowledge some regulative direction. Of course, agricultural models are not usually explicit concerning religious or ideological convictions (but see Rademaker and Jochemsen, 2019), and there is usually much common ground across communities and societies in so fundamental a practice as farming. Nevertheless, the normativity of sustainable agriculture cannot be properly addressed without explicitly going beyond economic norms to consider ultimate visions. A convenient secular way to approach this is through discussion of values (Table 1). Thus, what we will call enlightened agriculture concerns models or systems for farming that have explicit values (or normative) content of a certain kind.

The norms beyond economic productivity allow agricultural models to be opened up to aesthetic, jural and moral values. The technical and economic norms of farming remain important, but their interpretations and specifications are regulated *via* external conditioning norms (Figure 1), as farmers and communities of practice seek simultaneous realisation of these norms in various ways. This can mean that lower economic productivity is compatible with a perceived greater overall good. We turn now to consider these post-economic norms in more detail and to sketch how they can contribute to enlightened agriculture. As we do so, it is important to recognise that different worldviews can produce divergent views on many important questions, including the goal of farming, the duties of those involved, and the identity of the stakeholders of a farming system. Indeed, the very terms of a discourse (e.g., "goal", "duty", and "stakeholder") can be contested with a change of worldview—so the following can only aim at an illustrative sketch.

The aesthetic aspect has at its core the concept of harmony. Related normative concepts are beauty and ugliness, fun, boredom, humour, allusivity, and holism, as developed in arts, sports, tourism, etc. (Basden, 2019, p. 201). Opening up agriculture in its aesthetic aspect may entail, for example, concern for the aesthetics of the farmed landscape (Kang and Liu, 2022), or diversification of farm enterprises towards leisure activities. Although some such developments might compromise agronomic productivity, this need not be so, as found in successful pick-your-own initiatives (Carpio et al., 2008), and the voluntary Worldwide Workers on Organic Farms initiative (<https://wwooof.net/>). More profoundly, in some worldviews, aesthetic norms may lead farmers to adopt organic, biodynamic or permaculture practices in which harmony

is a guiding principle (Table 2). Sometimes the call to contribute to feeding growing human populations will be submitted to a vision of lower population densities as a prerequisite for greater flourishing of a wider Earth system. Aesthetic realisation may also mean, under some worldviews, the promotion of farm animal welfare (Lawrence et al., 2019) or biodiversity. These last concerns are considered under the next two aspects.

The jural aspect is centred around what is due, covering all forms of justice. Related normative concepts include responsibility, impartiality (hence equality), duty and fairness (Basden, 2019, p. 203). Opening up agriculture in its jural aspect has a wide range of implications, again depending on the worldview held. A crucial question is the kind of responsibilities that a farmer or farming community has towards other living beings: their neighbours and compatriots, other humans, domesticated animals, vertebrates, wild animals in general, inanimate beings, and possibly classes of beings (e.g., races, species, ecosystems, etc.). The influential definition of sustainability from the Brundtland Report (World Commission on Environment and Development, 1987) implies that people alive today at least have responsibilities towards current and future generations of humans, a widely-held view that is invoked to broaden the meaning of "sustainability" within sustainable intensification literature. The jural aspect thus pertains to what is often called social justice or social sustainability (Rose et al., 2021). In addition, just agriculture might also call for high standards of animal welfare, or vegan systems, reducing animal outputs. Indeed, increasing the ratio of vegetarian to meat output could be seen as better discharging our responsibilities to current and future generations (but see Budolfson, 2018), though it would likely require wider policy interventions.

An important consideration for just agriculture is pollution, and especially the forms of atmospheric pollution that influence global and future climates. Insofar as agriculture, taken as a sector, is modelled to be one of the largest global contributors to anthropogenic global change (Shukla et al., 2020), any duty towards the wellbeing of current and future generations of humans and other beings entails some responsibility to minimise net greenhouse gas emissions and strive towards carbon-negative practices. Much has been written about the prospects for this, and accounting with units of CO₂ equivalents allows, for example, models that indicate the net impact of various national agri-food policies on climate-change emissions (but see Lynch et al., 2021). However, a fully integrated, opened-up analysis would necessarily involve multiple criteria (Gunton et al., 2022) under some kind of simultaneous optimisation, which cannot be solved in a purely mathematical way (Martinez-Alier et al., 1998). Alongside greenhouse gas balances, atmospheric pollutants such as sulphates and particulate organic matter must be considered, as well as groundwater and watercourse pollution. Regulation of the latter varies widely among jurisdictions, and is a clear case of the need for regulatory action to help achieve enlightened agriculture.

Finally, the moral aspect is centred on loving care. Its related normative concepts include generosity, selflessness, sacrifice, forgiveness, charity, vulnerability, and volunteering (Basden, 2019, p. 205). There is probably an even wider range of implications of opening up agriculture morally than jurally, although much depends on the scope of responsibility outlined above. If, for

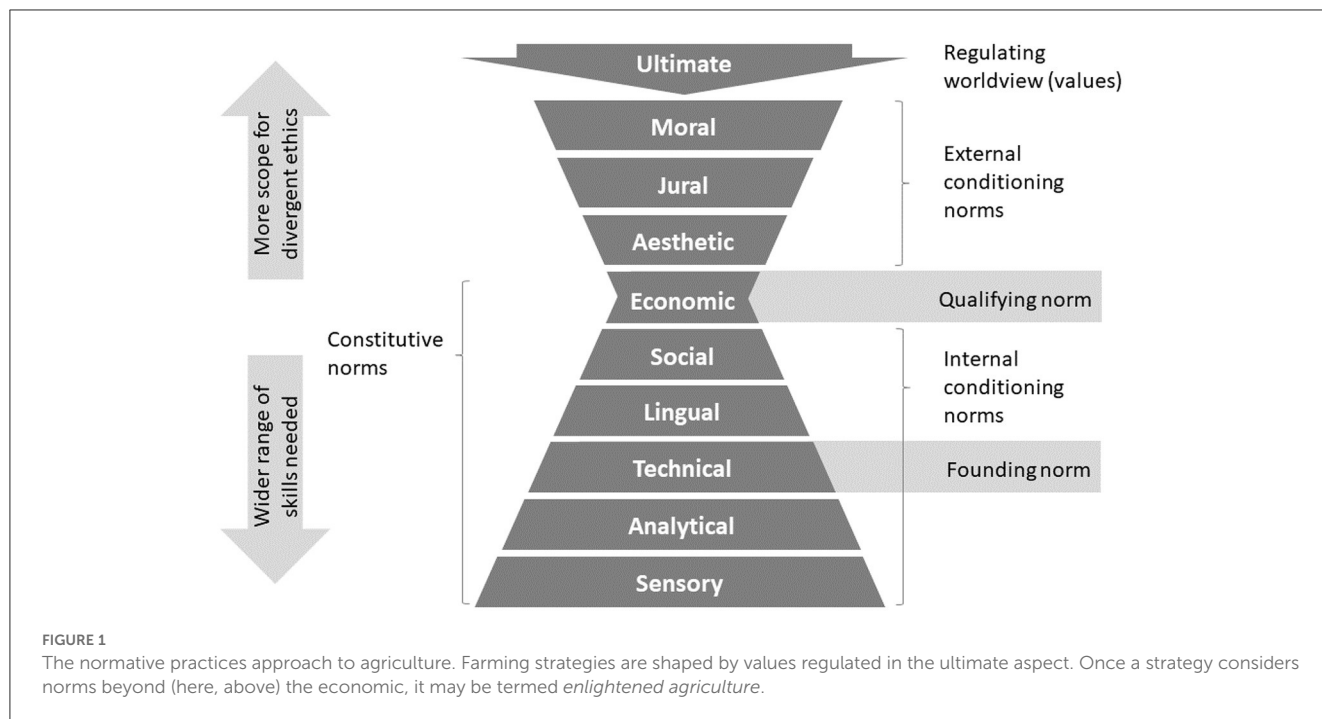


TABLE 2 Some visionary strategies for sustainable farming and how they might contribute to enlightened agriculture by addressing post-economic norms (bold font).

Strategy	Possible contributions to enlightened agriculture	Main norms promoted*	Sample reference
Agroecology	Alternative political and economic systems	Social; Jural	Altieri et al. (2017)
Organic or biodynamic farming	Holistic view, focused on harmonious land-sharing	Sensitive; Aesthetic	Barton (2018)
Permaculture	Holistic view, focused on harmony. Benefits farmed animals.	Aesthetic; Moral	Luna (2022)
Community-supported agriculture	Alternative economic paradigm (e.g. social credit)	Social; Jural	Birtalan et al. (2020)

*Suggestions only, since the specification of norms concerning a particular practice and its subjects is worldview-dependent.

example, humans are deemed to have minimal duties towards non-human animals, then either the aesthetic or the moral aspect will be the main locus of concern for other animals. Morally opened-up agriculture might also involve a re-discovery of food cultivation as a way of life for more people in industrialised countries. People engaged in urban vegetable gardening report senses of care, duty, and contribution towards nature as well as of belonging to a social community ([Ong et al., 2019](#); [Jensen and Sørensen, 2020](#)). Similarly, community-supported agriculture projects in industrialised countries are reported to build relationships of solidarity and mutual support along various dimensions ([Birtalan et al., 2020](#); [Gugerell et al., 2021](#))—much as subsistence farming has always done ([Walsh-Dilley, 2017](#))—and sometimes involving alternative economic systems ([Rivero Santos, 2017](#)). International arrangements such as fair trade may have potential to develop the “moral economy” of agricultural practices in some settings (but see [Wilson and Jackson, 2016](#)). Indeed, overall, the moral opening-up of agriculture likely points to a vast diversity of idiosyncratic models and strategies. A principal policy objective should therefore be to foster diversity and community governance in farming systems in place of centralised regulation and control. The principle of

subsidiarity ([Christie et al., 2019](#)) can respect this diversity of relationships and also the inevitability of ideological divergence.

To summarise: a model for agricultural practice may be termed “enlightened” if it gives some priority to post-economic norms—possibly accepting some reduction in economic productivity (without of course abandoning the economic constitution of farming). The brief survey in this section has highlighted a range of strategies that may thus qualify as enlightened agriculture. We have situated the prevailing concerns of the sustainable agriculture literature within the NPA framework of external conditioning norms that are realised under the guidance of regulating worldviews and their values. This survey is not complete, however, without a discussion of the ways in which outstanding “environmental” concerns—particularly biodiversity conservation—should be viewed.

5. Are there environmental norms?

What norms apply to the wide range of concerns often lumped under the heading “environmental”? Most such concerns are best

accounted for under other headings. Climate impacts and pollution were considered in the previous section as principally matters of justice, at least under common worldviews. The notion of ecosystem health has been problematised elsewhere (Lackey, 2001). Projects to control or eradicate pest species, both within and without farming, relate primarily to sensory norms, either because such organisms tend to cause us discomfort or disease, or because they jeopardise our supply of food and other basic requisites for our survival and health. Even people with highly ecocentric values are liable to prioritise their own survival to some extent, as indeed other animals seek their own survival, although of course other norms do compete with the basic norm of survival instinct, including jural and moral concerns for the welfare of other organisms, as discussed above. Yet another prominent and widely considered “environmental” good is biodiversity. Where does biodiversity conservation fit into a NPA view of farming?

Biodiversity is a concept that has shifted in meaning over time (Gunton et al., 2016, p. 1). In much contemporary usage, “biodiversity” refers in a vague way to quantity of living organisms, or to distinctive assemblages, or to perceived functionality of ecosystems. Norms for conserving organisms in general can readily be located in the jural and moral aspects. But the original meaning—as “biological diversity”—invokes a statistical index such as species richness. Biodiversity conservation, then, originally refers to maintaining or increasing the numerical values of this index, typically through protecting habitat for rarer species to minimise local (and global) extinctions. The motives given for this typically include the unknown potential instrumental value of species—such as to provide genetic resources for future agricultural breeding programmes, or simply because we cannot be sure how ecosystems would change following species extinctions—and the intrinsic value of all species—noting the irreplaceability of extinct taxa and the long time-spans over which new species typically evolve (Attfield, 2014; chap. 1). How can this conception of biodiversity be subject to norms? Perhaps it can be connected, under some worldviews, to a duty towards taxa such as species. But the NPA also offers a more direct norm for biodiversity. The core norm of the analytical aspect concerns correct distinction (Table 1), and is thus foundational to taxonomy. Human appreciation of biodiversity, therefore, is a form of analytical valuing of biotic relations (Gunton et al., 2022). Since the analytical aspect precedes the economic aspect, a concern for biodiversity *per se* does not entail enlightened agriculture. Nevertheless, we have seen how jural or moral concern for the wellbeing of other organisms does qualify agricultural systems in this way.

This leads us to consider an important area of sustainable development policy that concerns agriculture. Land-sparing is a policy in which the intensification of agricultural productivity in limited areas of a territory allows for enhanced biodiversity and other landscape benefits in other areas, such that the net benefit across the territory is greater than if a larger proportion were used for more extensive farming (land-sharing) (Fischer et al., 2014). This is an ambitious optimisation strategy concerning two distinct quantifiable goods: some measure of food production together with an external “environmental” good, commonly biodiversity *qua* species richness (Phalan et al., 2014). As such, land-sparing does not seek to open up farming practices themselves to any

higher norms but rather doubles down on forms of economic farm productivity in combination with strong regulatory control to prevent the expansion of farmland beyond prescribed limits (even in the case of increasing agricultural profitability). Land-sparing, therefore, does not promote enlightened agriculture, but might qualify as enlightened policymaking. This would depend upon a NPA analysis of policymaking, which we would expect to identify post-jural (i.e., moral) norms as criteria for enlightenment in the sense developed above for agriculture. In that case, land-sparing might be the sort of policy one would expect to be promoted by good landscape governance, whereas enlightened policymaking would need to go further and deliver some kind of moral goods. This is clearly a topic for further research.

Proposing to bring some order to sprawling notions of sustainable intensification, Gunton et al. (2016) offered a general definition that can be adapted by specifying the spatial, temporal, and ethical scope considered when the outputs of a farming system are measured. The spatial scope naturally ranges from a field scale to the entire global food system, while the temporal scope ranges from a single season to a long-term inter-generational view. And the ethical scope can initially be specified to distinguish between internal and external impacts of farming (the definition of “environment”). Gunton et al. (2016) developed this by outlining a scale of ecosystem services that might be included in the concept of farm productivity. Agricultural provisioning (as an “agroecosystem service”) is the minimal starting point, and the scope of sustainable intensification is increased as more-independent ecosystem services are counted. Such an ordering of ecosystem services ought to have independent grounding, yet the theory underlying ecosystem services does not offer any overarching structure (Gunton et al., 2017). A sustainability audit also needs to consider non-ecological components of farming such as fossil-fuel usage (Gunton et al., 2016), yet the ecosystem services framework is routinely criticised in the domains of social and cultural goods (Cooper et al., 2016; De Vreese et al., 2019) and more generally for its political and economic positioning (e.g., Robertson, 2012; Spash and Aslaksen, 2015; O’Neill, 2017). If the ecosystem services framework is not a reliable foundation for the ethical scope of sustainable intensification, the NPA can provide an alternative, as outlined above.

6. Conclusion and outlook

Enlightened agriculture, as defined here, means agricultural systems designed to deliver aesthetic, moral and/or jural goods, possibly at some cost to economic productivity. In practice, personal and cultural worldviews will influence what systems actually qualify as enlightened agriculture, especially where there is disagreement over specific norms (e.g., the aesthetic goodness or badness of various arable weed species or the rights of non-human animals). This concept of enlightenment will also admit of degrees, according to how widespread and significant the post-economic benefits are deemed to be. Thus, the NPA provides only a first step towards understanding the normative structure and possibilities of farming.

The concept of enlightened agriculture integrates a diversity of norms that may be realised in markedly divergent ways, under the regulation of the diverse values and worldviews of individual humans, communities and organisations. To expect such diversity is not necessarily to endorse all the visions that may co-exist. Just as ecological diversity can contribute to the resilience of agroecosystems (Jackson et al., 2007), a certain amount of worldview (values) diversity in approaches to enlightened agriculture may lead to greater resilience in global food systems, and greater global progress towards the flourishing of human and non-human life. However, the very diversity of aspects of normativity is posited here as an underlying, non-negotiable component of goodness. Indeed, each of the later aspects contains a principle that points beyond that aspect to others. The core aesthetic norm points to the need for harmonious integration of norms across aspects, the core jurial norm points to the need to do justice to norms in each aspect, and the core moral norm points to the need to care for other facets of goodness. This pluralistic spirit goes back to the heart of Dooyeweerd's understanding of the irreducible richness and interconnectedness of a created reality (Dooyeweerd, 1953a; 3–4).

While farming practices always have a regulative side, many theoretical models are not normatively explicit concerning their values orientation. Much of the academic and grey literature on sustainable agriculture (e.g., papers cited at the start of Section 3, above) is ambiguous as to ultimate values, leaving readers and practitioners to explore the alignment of proposals with their own values and ultimate commitments. Thus, there may be a values gap between theory and practice. This could be filled by more empirical study of farmers' values, and more theoretical concern for simultaneous realisation of norms. Additionally, in the light of the many aspects of global change, there is a need for more comparative studies of how the value systems and ontologies of different worldviews relate to concepts such as sustainability and enlightened agriculture. Beyond that, the concept of "enlightenment" advocated here—that is, of opening up a social practice to norms beyond its

qualifying norm, should be applicable to all kinds of practices and deserves further investigation in other areas besides agriculture.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

RG conducted the research and wrote the text.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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