

Should Agriculture be intensified in the name of the environment?

The advantages and limitations of land sparing to feed the world and preserve biodiversity



How to reconcile needs, especially food needs, with the preservation of biodiversity? This is where the tumultuous scientific and political debates between land sparers and land sharers arise. Is it better to produce as much as possible on a minimum surface area, even if it means using methods that are harmful to the environment, in order to leave more space for nature? Or should we adopt less intense and more respectful environmental practices, with the risk of having to farm larger land areas?

The answer to this question, in defining what is the best way to farm, has huge implications on food sustainability trajectories, and on the policy choices that frame them.

Reconciling agriculture and biodiversity

Biodiversity is declining at a rate never seen in human history: dozens to hundreds times faster than the average rate over the past 10 million years. Land use for human needs, especially agriculture, is the main way we harm biodiversity. The trend is likely to worsen as land will be stretched to meet the needs of 9-10 billion people who will inhabit the planet by 2050.

The land sparing analysis framework

Land sparers have developed a simple theoretical model that creates a relationship between biodiversity and yield. They have attempted to demonstrate that environmentally friendly farming methods require more land, leaving less space for natural habitats. This would ultimately be counterproductive for the environment and species conservation.

Many scientists have reacted to this method of analysis and to the conclusions drawn from it. They have been given the name of land sharers. They are united behind the idea that biodiversity-friendly practices on agricultural land are also fundamental and that the land sparing framework is insufficient to define food systems sustainability.

Limits of the analysis framework and of its political use

The land sparing scientific discourse is used to maintain a favourable socio-political environment to industrial agriculture, by giving environmental legitimacy to the agricultural model based on chemistry, landscape simplification and mechanization. This scientific discourse and its political use suffer from many limitations. These limitations invalidate the idea that agro-industrial intensification is the way to save biodiversity and feed humanity.

SUPPLY AND DEMAND DYNAMICS

Do we really need to produce more? In order to protect natural areas from being farmed, questions need to be asked about the uses of farmland: animal products, losses and wastage, agrofuels, textile needs. Therefore, the first limit of land sparing is its focus on how to reach a given level of supply, without questioning this level.

Moreover, the market is not a zero-sum game, and land sparing is still blind to the dynamics between supply and demand. Intensification is often accompanied by an expansion of markets: improved yields lead to more food production at lower prices, which increases demand. In order to save land from being farmed, political regulation is needed.

CRITICISMS OF THE CONSERVATION PARADIGM

Value judgements cannot be avoided when choosing indicators to characterize biodiversity and this will influence research results. Land sparing, through its choice of indicators, reflects a certain biodiversity conception that favours natural habitats and specialist species.

If biodiversity of natural habitats is important, should it be preserved at the expense of agroecosystem biodiversity?

Moreover, compartmentalising the world into natural and unnatural areas has its limits. Firstly, neither animal species nor environmental impacts recognise conservation area boundaries. Furthermore, the idea of offsetting negative environmental impacts with positive impacts elsewhere has many limitations, and it does not encourage changes in destructive practices.

FEEDING THE WORLD

The land sparing framework is limited to a given amount of food production, which is far from being a sufficient condition for food security. As poverty and inequality issues are fundamental to food security, the way in which production is intensified will have enormous consequences. Thus, the continuation of the Green Revolution model, based on high capital intensity and low labour intensity, has very little to offer to food security today, as opposed to agro-ecological practices that can boost and empower peasant communities.

VARIOUS PATHS TO HIGH YIELDS

Conventional farming practices and large farms are not necessarily the best guarantee of high yields.

While most studies find that organic yields are generally lower than conventional yields, there are two other fundamental elements to consider. Firstly, there is a historical underinvestment in organic, chemical-free agriculture and more broadly in research into agro-ecological systems. Rebalancing agricultural research in this direction could reduce or eliminate this gap. Secondly, many agro-ecological practices can significantly increase yields. It is therefore entirely feasible to increase yields in many parts of the world, especially in those most in need, with agro-ecological practices and without using the conventional agriculture model.

The idea that large farms are more efficient and productive is often a myth. On average, small farms produce more food than large farms: labour intensity on small farms allows them to compete with the output of large conventional farms. However,

huge yield gaps still exist in areas dominated by small-scale agriculture, such as in sub-Saharan Africa. The way in which this yield is sought to be improved (conventional solutions adapted to small-scale farming on the one hand, and agroecology on the other hand) has important socio-economic impacts that need to be considered.

SUSTAINABLE AND RESILIENT PERFORMANCE

There are limits to the competition for yield between agroecology and highly intensive conventional farming. Indeed, you cannot compete with a doped runner. But in the end, is it a problem to dop our runner, our agriculture? Yes, if the runner risks a heart attack at the age of 40: intensive systems can make the land completely unproductive in the long term. And yes, if that rider can only perform in dry weather and on a perfect road: intensive systems can be extremely fragile to climatic hazards, pests and other diseases. It is therefore necessary to go beyond yield as the only indicator, as it neglects resilience and the long-term sustainability. We need to find a production rate that is compatible with natural balances and processes. This balance will somewhat reduce the maximum possible yield, but it is the only guarantee of long-term sustainability and stability.

WORLDVIEWS AND POLITICS

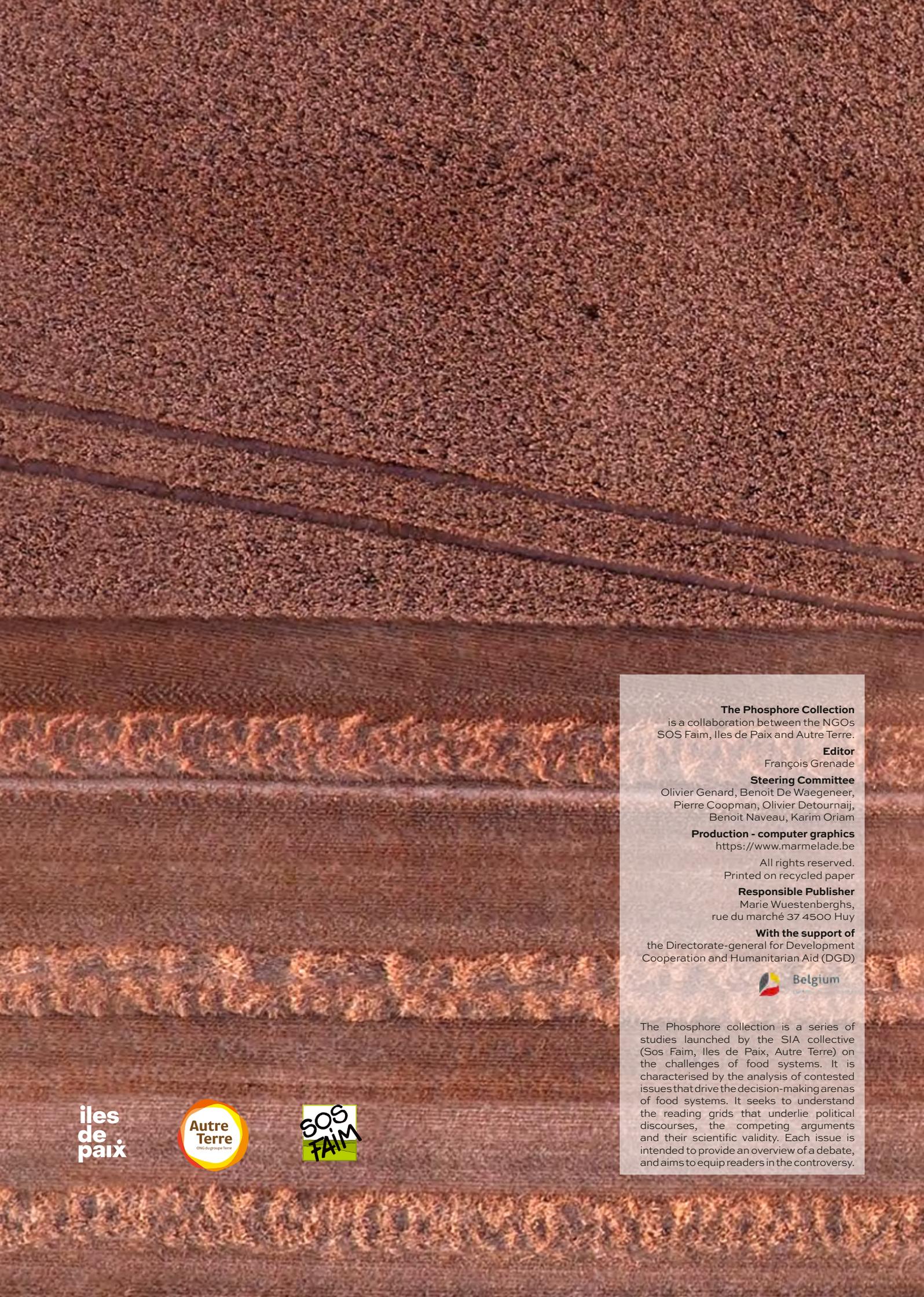
The choice of scientific tools, methods and indicators is not neutral: it is an inherently subjective choice, a choice of values, a political choice. This choice reflects an imaginary. In the case of land sparing, the imaginary is based on a duality between humans and nature. This interpretation, which sees humans, and agriculture, outside nature, will be much more comfortable with technical solutions that risk to profoundly modify agricultural biodiversity, rural territories and to worsen the concentration of power within food systems.

The land sparing approach dominates many debates for two reasons. Firstly, it translates a complex reality into simple indicators that are easy to fit into the dominant model. Secondly, the politics of knowledge, and the political and financial interests that condition it, are more favourable to it than to land sharing. The land sharing interpretation is therefore not just an analytical tool, but a real political tool, as it allows to define the terms of the debate and to advance certain specific world visions.

Conclusion

WHAT CAN WE LEARN FROM THIS ANALYSIS OF LAND SPARING?

On the one hand, land sparing has had the merit of putting at the heart of the debate certain fundamental aspects on the balance between environment and food systems: biodiversity, land use and yield. On the other hand, it is also important to remember the simplicity of the framework analysis, and the many argumentative shortcuts that have been used to establish intensive conventional agriculture as the ultimate solution to solve the equation between food systems and the environment. These limitations allow us to state that arguments based on land sparing to defend industrial agriculture, to condemn organic farming and to castigate agroecology are simply not valid.



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The Phosphore collection is a series of studies launched by the SIA collective (Sos Faim, Iles de Paix, Autre Terre) on the challenges of food systems. It is characterised by the analysis of contested issues that drive the decision-making arenas of food systems. It seeks to understand the reading grids that underlie political discourses, the competing arguments and their scientific validity. Each issue is intended to provide an overview of a debate, and aims to equip readers in the controversy.

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