

Sowing Diversity: Peasant Paths to Biodiversity and Food Sovereignty

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“We stand now where two roads diverge.
But unlike the roads in Robert Frost’s
familiar poem, they are not equally fair.
The road that we have long been traveling
is deceptively easy, a smooth
superhighway on which we progress with
great speed, but at its end lies disaster.
The other fork of the road – the one ‘less
traveled by’ – offers our last, our only
chance to reach a destination that
reassures the preservation of our Earth.”

-Rachel Carson





The ravages of industrial agriculture continue



Reports of more
than 75% insect
loss in the last
three decades

Hallmann, et. al. 2017. *PloS One*



The Guardian

US edition ▾

Tue 20 Mar 2018

'Catastrophe' as France's bird population collapses due to pesticides

Dozens of species have seen their numbers decline, in some cases by two-thirds, because insects they feed on have disappeared



▲ Sales of [pesticides](#) in France have climbed steadily. Photograph: Alain Jocard/AFP/Getty Images

After the insects are gone the birds also go and we are left with a “silent spring”

- Bird populations have declined by a thirds in France and Denmark
- In France, some bird species have decline by two thirds

Nabel et al., 2010. *Avian Conservation Ecology*
Bowler et al., 2019. *Conservation Biology*



Photo: David Zeig / Audubon Photography Awards



Research
Paper

Energy, Environment
and Resources Programme

February 2021

Food system impacts on biodiversity loss

Three levers for food
system transformation
in support of nature

Tim O'Brien, Carling Bug, Helen Hurvell,
Rohan Puddicombe and Laura Vellekoop

“Our global food system is the primary driver of biodiversity loss, with agriculture alone being the identified threat to 24,000 of the 28,000 (86%) species at risk of extinction. The global rate of species extinction today is higher than the average rate over the past 10 million years.”

CHATHAM
HOUSE

UN
environment
programme

COMPASSION
in world farming
ciwf.org

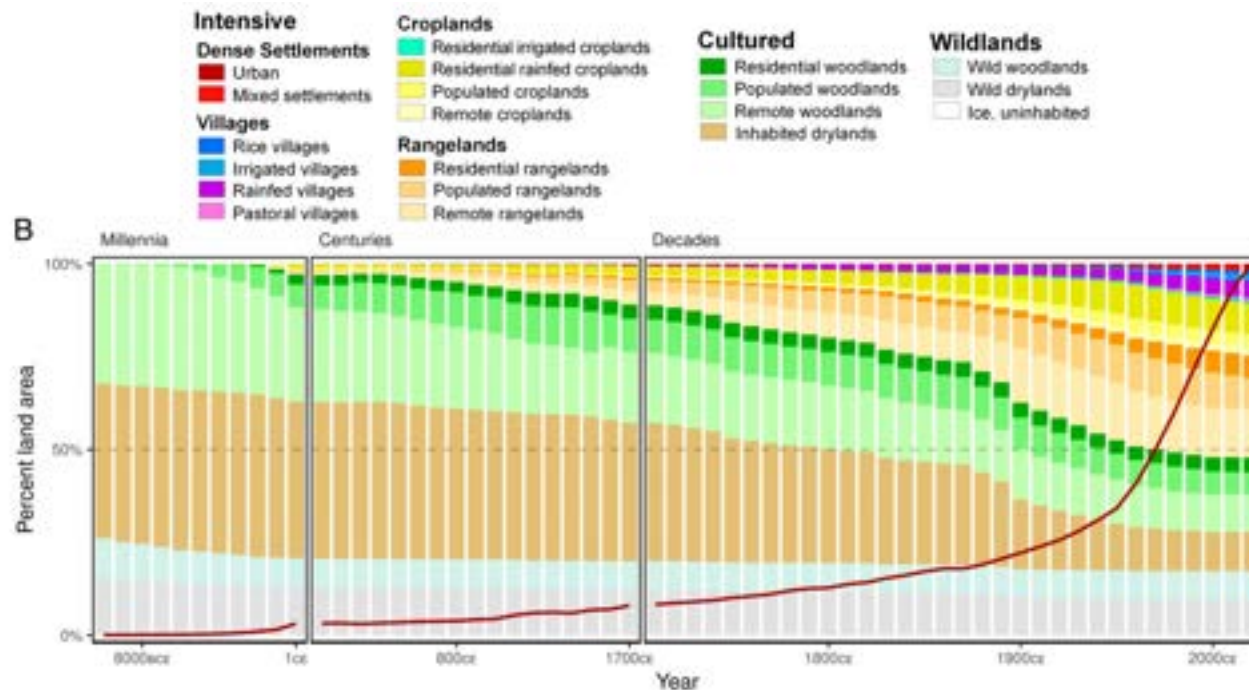
CHATHAM
HOUSE

The Royal Institute of International Affairs
Chatham House

Ellis et al., PNAS, 2021

People have shaped most of terrestrial nature for at least 12,000 years

Erle C. Ellis (艾尔青)^{a,1}, Nicolas Gauthier^{b,c}, Kees Klein Goldewijk^{d,e}, Rebecca Bliege Bird^f, Nicole Boivin^{g,h}, Sandra Diazⁱ, Dorian Q. Fuller (傅稻健)^{j,k}, Jacquelyn L. Gill^l, Jed O. Kaplan^m, Naomi Kingstonⁿ, Harvey Locke^o, Crystal N. H. McMichael^p, Darren Ranco^q, Torben C. Rick^r, M. Rebecca Shaw^s, Lucas Stephens^t, Jens-Christian Svenning^u, and James E. M. Watson^{v,w}



"Even 12,000 y ago, nearly three quarters of Earth's land was inhabited and therefore shaped by human societies, including more than 95% of temperate and 90% of tropical woodlands. Lands now characterized as "natural," "intact," and "wild" generally exhibit long histories of use, as do protected areas and Indigenous lands.."

Ellis et al., PNAS, 2021



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The current biodiversity crisis can seldom be explained by the loss of uninhabited wildlands, resulting instead from the appropriation, colonization, and intensifying use of the biodiverse cultural landscapes long shaped and sustained by prior societies.

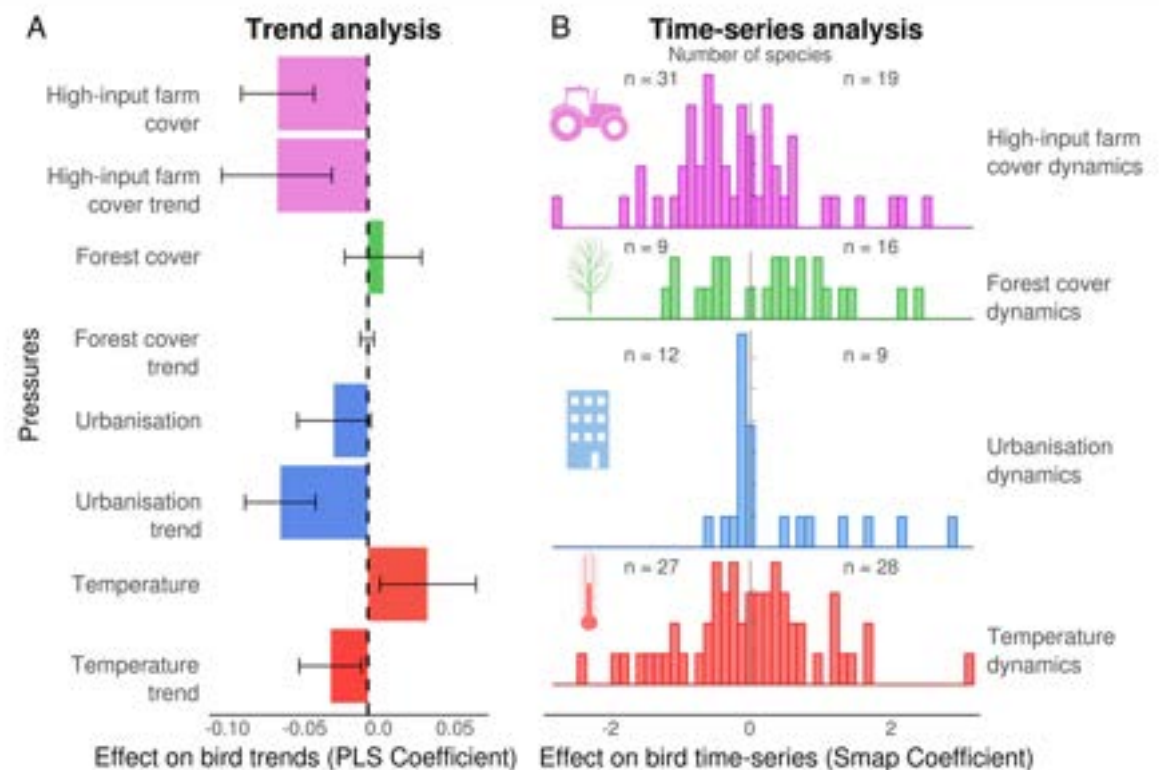


Farmland practices are driving bird population decline across Europe

Stanislas Rigal¹, Vasilis Dakor², Hany Alonso³, Anders Auring⁴, Zoltán Benke⁵, Liuli Brorson⁶, Tomasz Chodkiewicz⁷, Przemysław Chyłański⁸, Elisabetta de Cam⁹, Juan Carlos del Moral¹⁰, Cristian Dorca¹¹, Virginia Escandell¹², Benoit Fontaine¹³, Ruud Poppen¹⁴, Richard Gregory¹⁵, Sarah Harris¹⁶, Sergi Hernandez¹⁷, Magne Huseby¹⁸, Christina Ieronymidou¹⁹, Frédéric Jiguet²⁰, John Kennedy²¹, Alena Kováčik²², Predrag Kimer²³, Lechordaw Kuczyński²⁴, Petras Kurliušius²⁵, John Arie Kūšy²⁶, Aleksi Lehtikinen²⁷, Åke Lindström²⁸, Romain Lorrillière²⁹, Charlotte Mørch³⁰, Alessio Nelli³¹, David Noble³², Daniel Palm Eklösten³³, Jean-Yves Paquet³⁴, Mathieu Perrier³⁵, Clara Pádevall³⁶, Danae Portolou³⁷, Jiri Reif³⁸, Hans Schmid³⁹, Benjamin Seaman⁴⁰, Zoltán D. Szabó⁴¹, Tibor Székely⁴², Guido Telleri Florenzano⁴³, Norbert Teufelbauer⁴⁴, Sven Trautmann⁴⁵, Chris van Turnhout⁴⁶, Zdeněk Vermouzek⁴⁷, Thomas Vikström⁴⁸, Petr Voříšek⁴⁹, Anne Weiserba⁵⁰, and Vincent Devictor⁵¹

Edited by Netta Perlefs, University of Michigan, Ann Arbor, MI, received September 26, 2022; accepted March 6, 2023

- Agricultural intensification is the main driver of the loss of bird species in Europe.

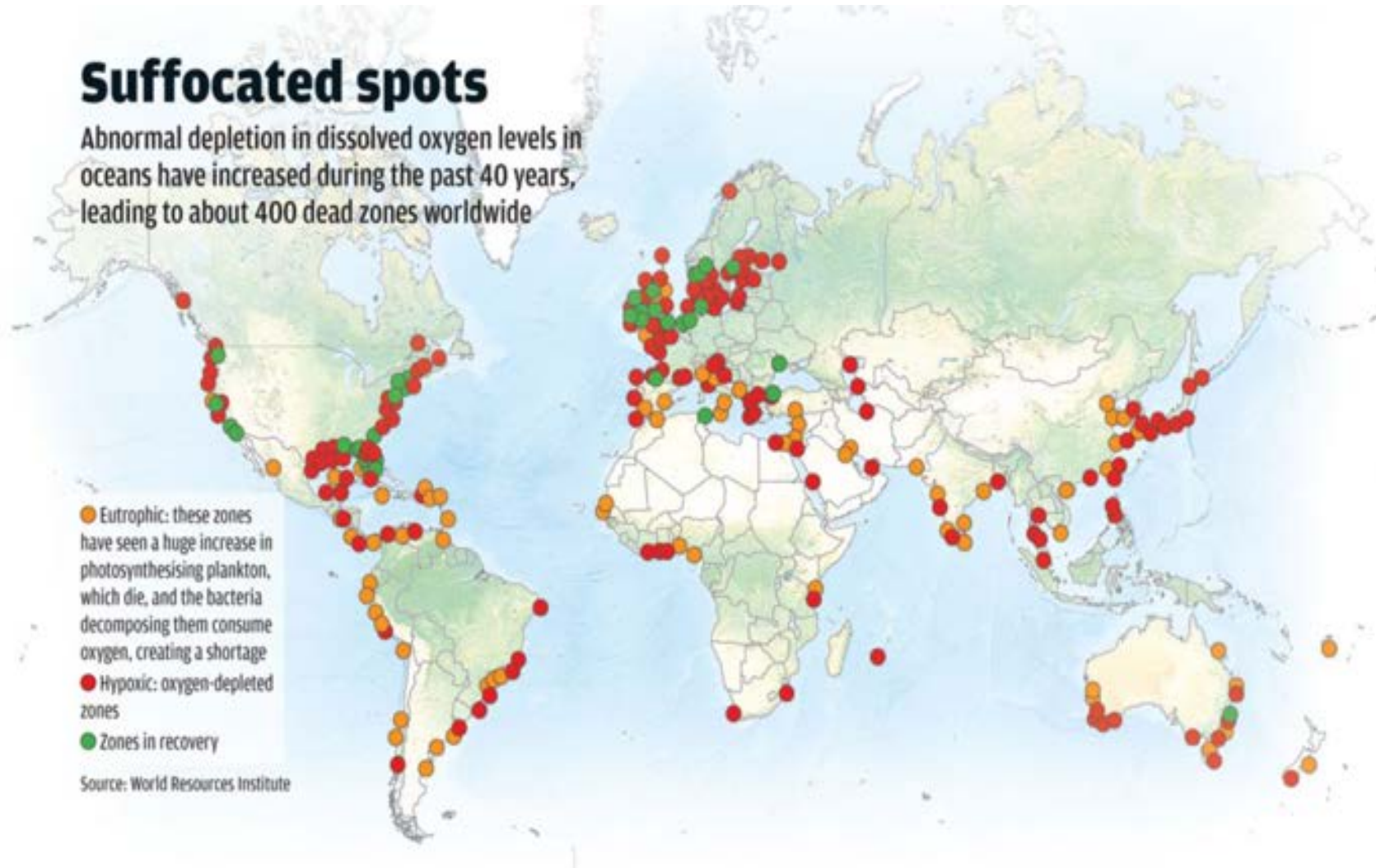


Suffocated spots

Abnormal depletion in dissolved oxygen levels in oceans have increased during the past 40 years, leading to about 400 dead zones worldwide

- Eutrophic: these zones have seen a huge increase in photosynthesising plankton, which die, and the bacteria decomposing them consume oxygen, creating a shortage
- Hypoxic: oxygen-depleted zones
- Zones in recovery

Source: World Resources Institute



Dreitburg et al., 2018, *Science*

The global food system is responsible for a third of GHG emission

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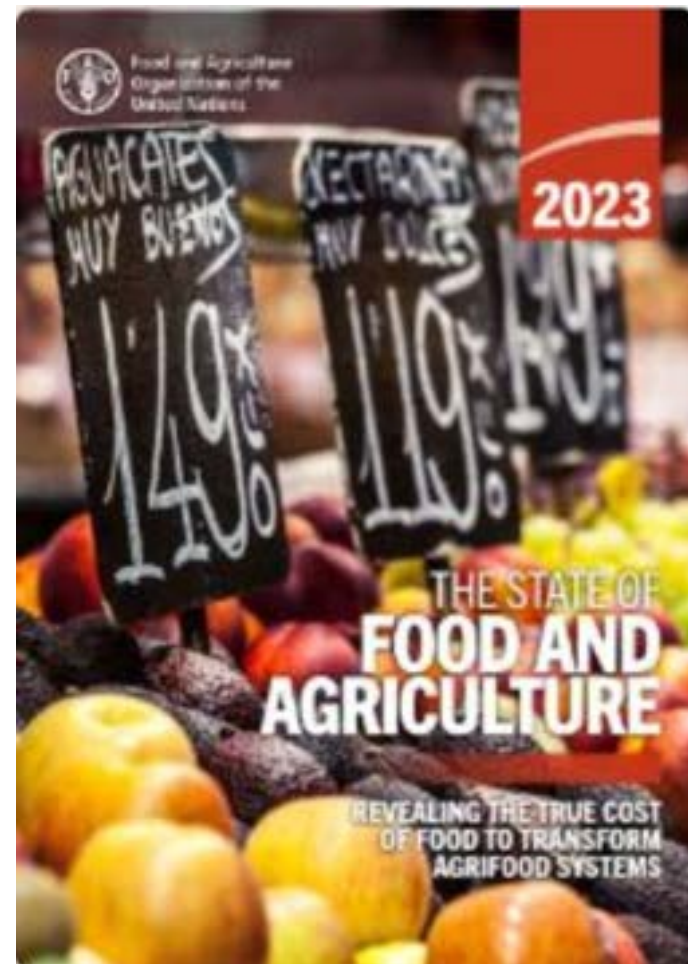
Article | [Published: 08 March 2021](#)

Food systems are responsible for a third of global anthropogenic GHG emissions

[M. Crippa](#), [E. Solazzo](#), [D. Guizzardi](#), [F. Monforti-Ferrario](#), [F. N. Tubiello](#) & [A. Leip](#)



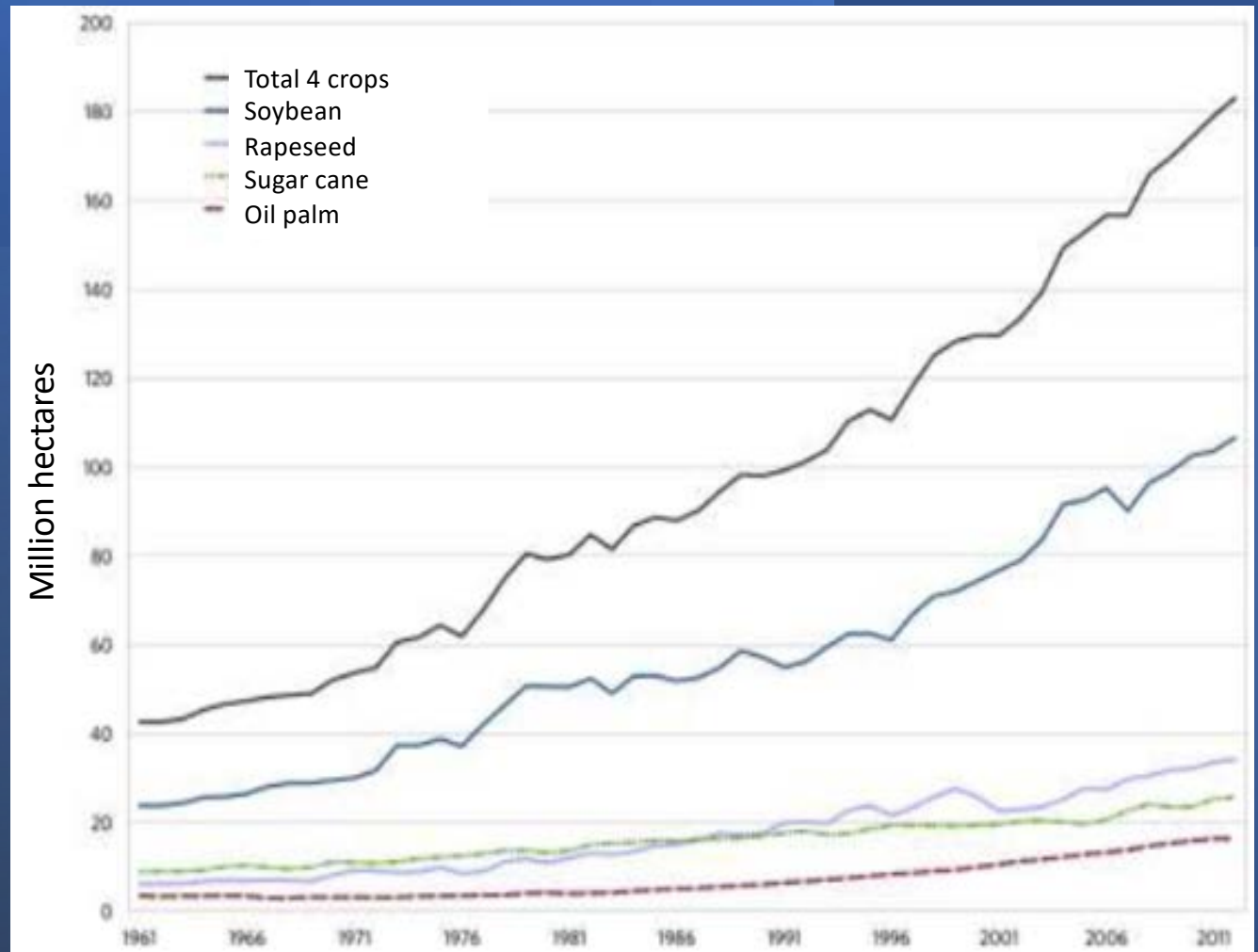
Recently (2023), FAO estimated that our industrialized global food system has a hidden cost of \$12.17 trillion (mostly in health and environmental impacts)



We are at a Crossroad



Amount of land
in industrial
crops continue
to increase



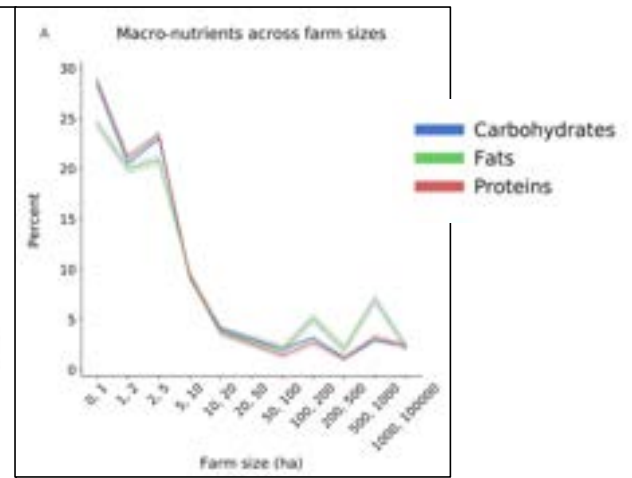
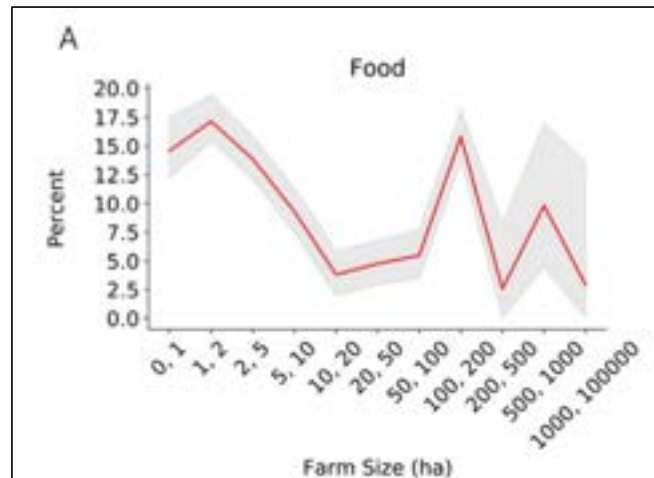
Agroecology and alternative food systems are being embraced by millions of farmers, especially in the Global South, where a larger proportion of the population is still directly connected to the land.



Can small scale farmers
practicing agroecology feed
the world?

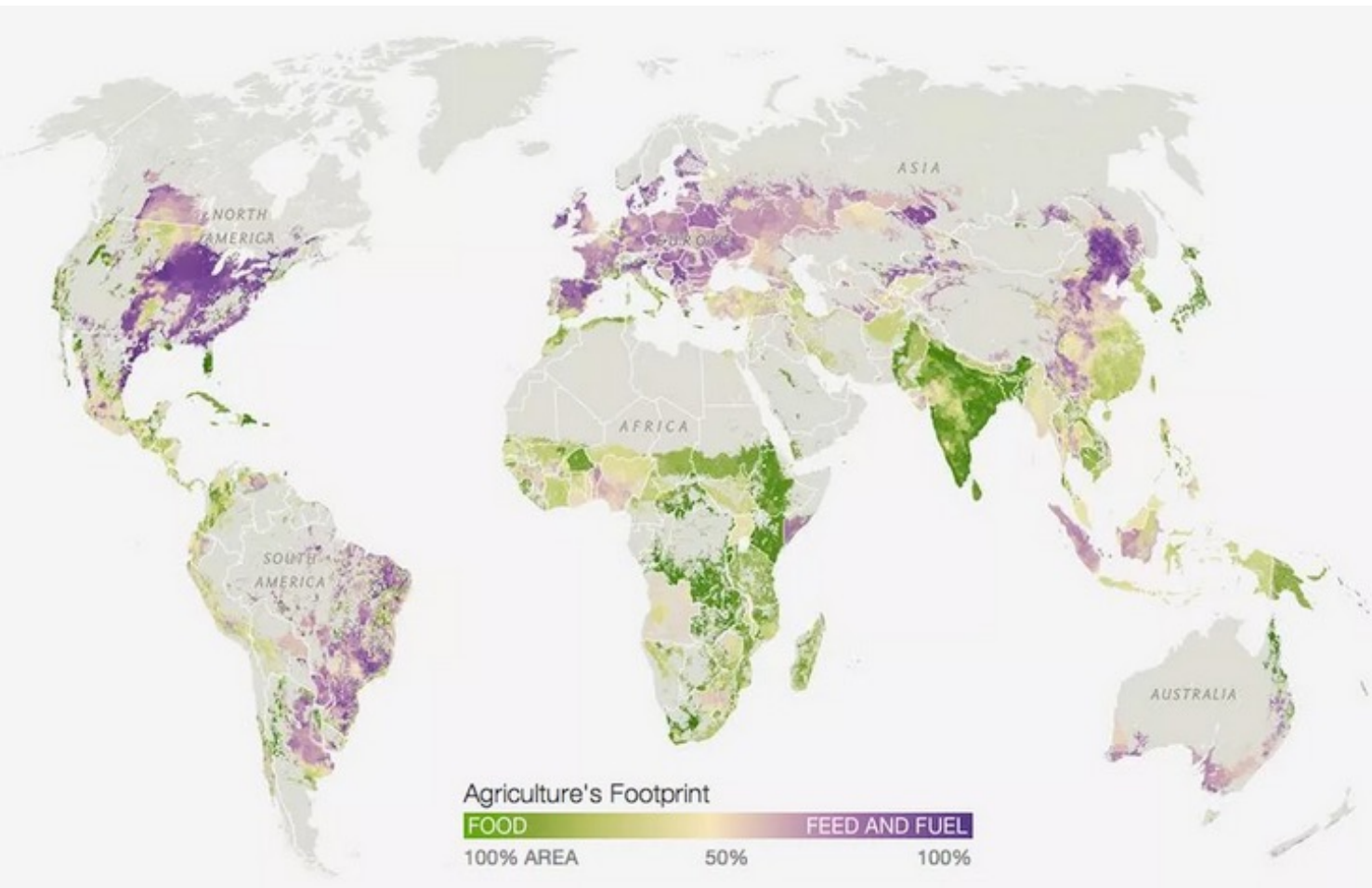


Small-scale
farms
produce
more food



Ricciardi et al., Global
Food Security, 2017

Crops grown for Food Versus Animal Feed and Fuel



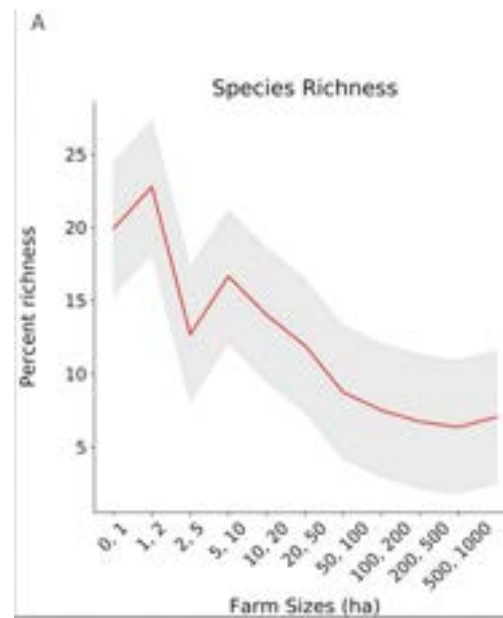
- 55 percent of the world's crop calories are eaten directly by people
- 36 percent is used for animal feed.
- 9 percent goes toward biofuels and other industrial uses.

Emily S Cassidy et al 2013
Environ. Res. Lett.8



Global food security is not
directly linked with global
crop production

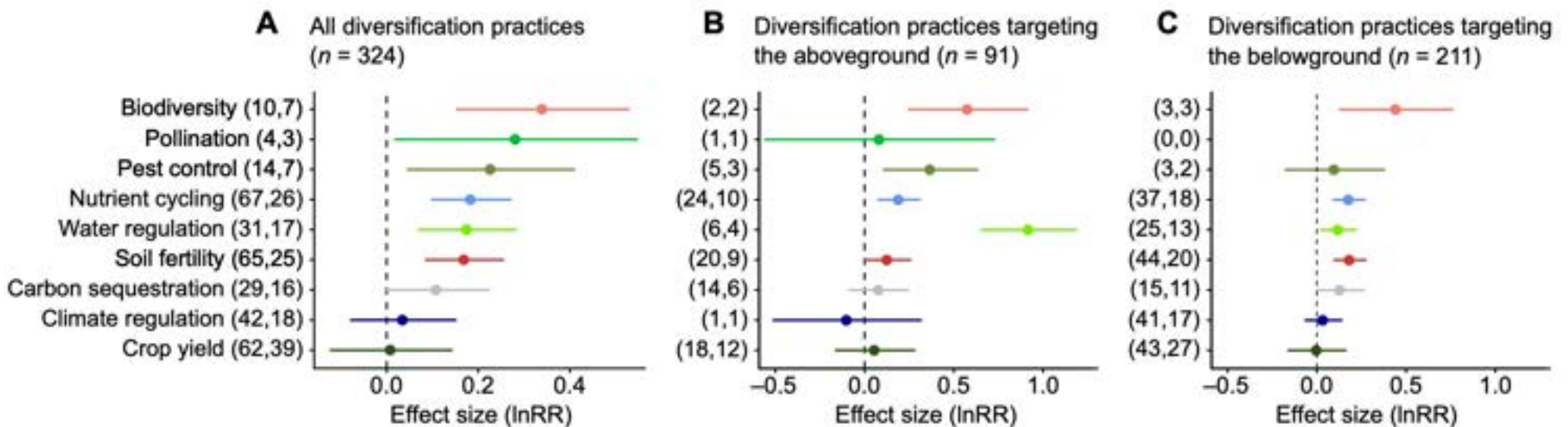
Small farms
are more
diverse



Ricciardi et al., Global Food Security, 2017



Diversification increase biodiversity and multiple ecosystem services without compromising yields





Agroecology and the Right to Food

- Small-scale farmers using agroecology can double food production in entire regions within 10 years while mitigating climate change, conserving biodiversity and alleviating rural poverty.

-Olivier De Schutter, UN Special Rapporteur on the Right to Food (*March 2011*)

What is agroecology?

- A practice
- A science
- A movement



1) The Practice of Agroecology

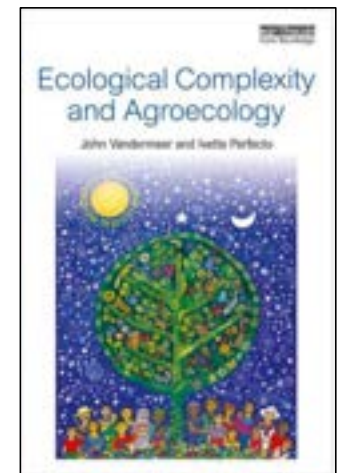
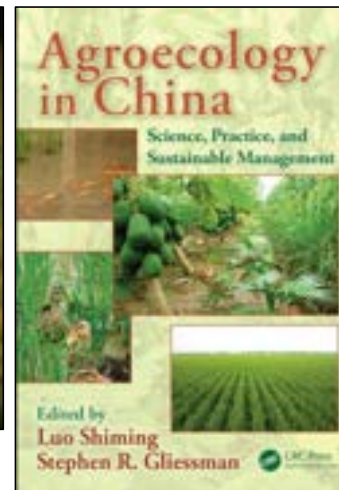
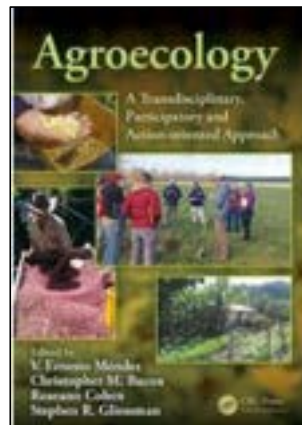
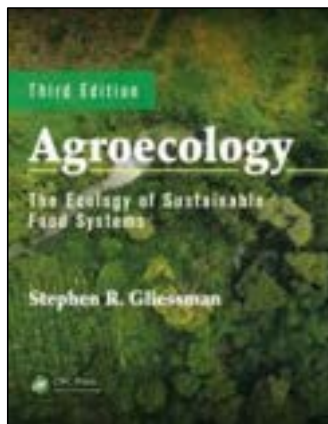
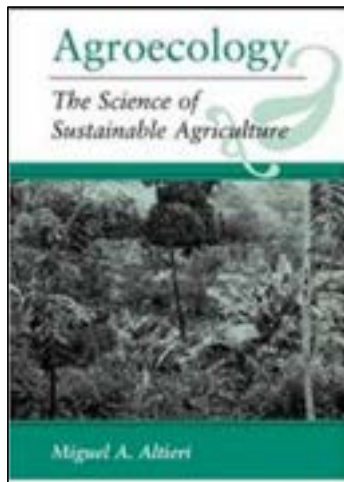
- Sustainable use of resources
- Local farmer's knowledge and priorities
- Wise use of biodiversity to provide ecosystem services and resilience
- Solutions that provide multiple benefits (environmental, economic, social) from local to global
- Agroecology is not capital intensive but **thought** and **knowledge intensive**

Agroecology ≠
Organic agriculture



2) The Science of Agroecology

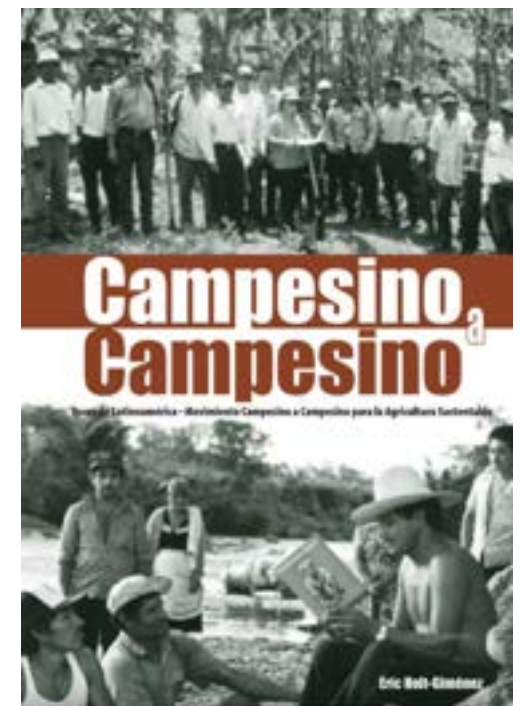
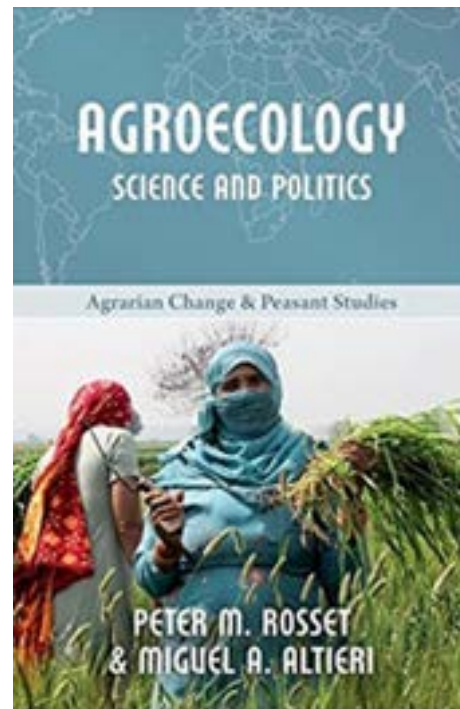
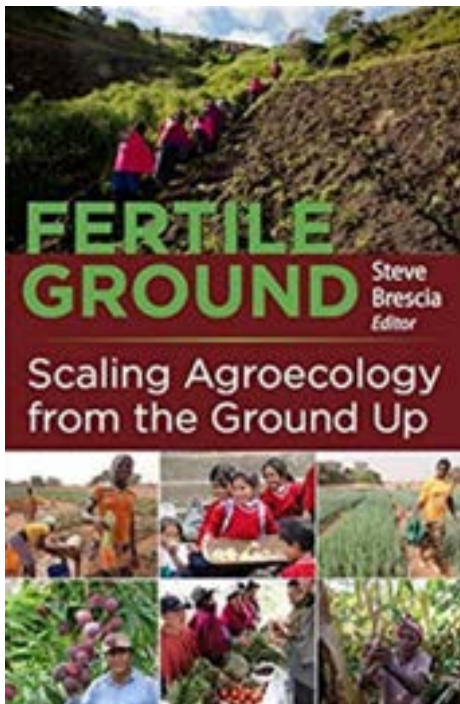
- Agroecology is the study of the interactions between plants, animals, humans and the environment within agricultural systems (Delgaard et al., 2003 *Agr. Ecosyst & Environ.*).
- Agroecology is inherently **interdisciplinary**.
- The science of agroecology is in constant **dialogue with traditional knowledge**.





3) The Movement of Agroecology

- Millions of farmers have embraced agroecology in an organized fashion (scaling out of agroecology)



Examples



Zero Budget Agriculture in India

MST Promotes Agroecology in Brazil



Agroecological Production in Cuba Promoted by ANAP



Peasant Agroecological Schools



The agroecological movement is political

- Emerged as a way of resisting neoliberal globalization and the expansion of industrial agriculture
- It is based on emancipatory politics
- And it is strongly linked with the concept of Food Sovereignty (La Via Campesina)



Nyéléni Declaration

- **Food sovereignty** is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations. It defends the interests and inclusion of the next generation.





Image: Michael Jabareen, Heinrich Boll Stiftung

Agroecology in Palestine

- Farmers, cooperatives, civil society organizations
- Goals of conserving biodiversity and producing nourishing food for the people in the same geography
- Agroecology as **emancipatory (oriented towards liberation, response to a history of oppression)**

Image: still from "The Untold Revolution," Dalia Association/HBF

A Brief History of Agriculture and Landscape Change in Israel/Palestine

Expansion of the State of Israel has been a process of agrarian and ecological transformation, particularly through the industrialization of agriculture (Groszlik et al., 2021; Kohlbry, 2023; Tesdell et al., 2018)

- Large scale, high-tech, irrigation intensive monoculture with reliance on pesticides and herbicides
- Flooding of Palestinian markets with Israeli produce, forcing many peasant farmers to turn to industrial agricultural methods or leave farming for wage labour



Image: monoculture in the Negev/Naqab (Shutterstock)

Expanded access
to land, natural
resources, and
food for Israelis;
restricted access to
land, food, and
biodiversity for
Palestinians

In 2019, 1.6 million out of more than 4.5 million Palestinians in the West Bank/Gaza were deemed food insecure and reliant on food aid (World Food Program, 2019)



International Response?

Since the Oslo Accords and especially the Second Intifada, global superpowers have continued to flood the West Bank/Gaza with food aid.

- UNRWA
- World Food Programme
- USAID

While food aid is important in times of acute disaster, long-term emphasis on "aid" not only ignores, but enables the root causes of Palestinian food insecurity: Israeli settler colonialism and the industrial food system.



Agroecology in Palestine



- Response to this history of colonization, dispossession, and the rise of an international food aid system
- How can Palestinians employ diversified agricultural methods that do not rely on external inputs and that support both food production and conservation of the land so that Palestinians can build community sovereignty and access flourishing life?

SOVEREIGNTY – no reliance on inputs/capital-intensive technology, access to diversified diet, and access to/stewardship of natural resources all in the same land



A few Palestinian organizations doing advocacy, community education, and farmer support regarding agroecology:

- 1) Union of Agricultural Work Committees**
- 2) Dalia Association**
- 3) Palestine Institute for Biodiversity and Sustainability**



We are at a Crossroad

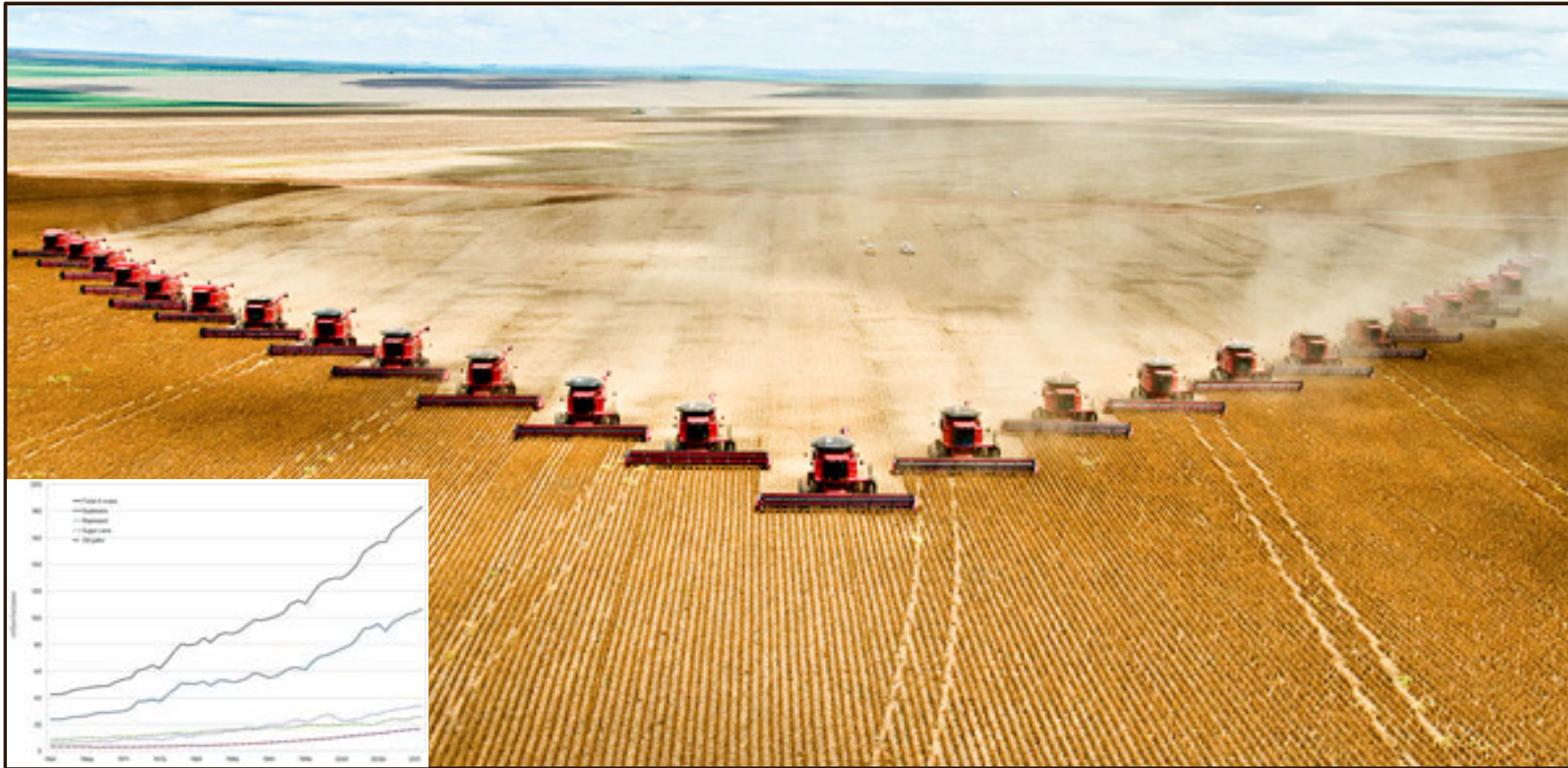


Agroecological systems

- High farm and landscape diversity
- Low external inputs
- Small/medium scale farms
- Strong local distribution networks

Industrial agriculture

- Monocultures/low farms and landscape diversity
- High external inputs
- Large scale farms
- Dominance of big corporations /long distribution chains





There is
Hope!

