Many shades of grey

The context-dependent performance of organic agriculture

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Current conventional agriculture
What do we know about organic performance?
Comparing the yields of organic and conventional agriculture

Verena Seufert¹, Navin Ramankutty¹ & Jonathan A. Foley²
Continents

USA

Europe

Africa
Asia
Europe
North America
Oceania
South America

AVERAGE ORGANIC YIELD GAP

Seufert (2018), Encyclopedia of Food Security and Sustainability
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Seufert (2018), *Encyclopedia of Food Security and Sustainability*
## Context-Dependency of Yield Gap

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Can organic management increase yields in low-input systems in countries of the Global South?

What drives differences in the organic yield gap?

How can we close the organic yield gap?
Biodiversity

Soil

Water quality

Climate

Water quantity

Seufert & Ramankutty (2017), Science Advances
Per unit area
Organic compared to conventional...

Seufert & Ramankutty (2017), *Science Advances*
Per unit output
Organic compared to conventional... per unit output

Seufert & Ramankutty (2017), *Science Advances*
Farm profitability  
Resilience  
Autonomy  
Other benefits  
Farm worker health  
Rural employment  
Farm wages  
Labour conditions  

Food prices  
Vitamin content  
Mineral nutrients  
Secondary metabolites  
Low pesticide residues

Seufert & Ramankutty (2017), Science Advances
What we don't know

- Organic area
- Organic producers
- Yield studies
- Profitability studies
- Biodiversity studies
- SOC studies

Legend:
- Europe
- North America
- Oceania
- Asia
- Africa
- Latin America

Seufert & Ramankutty (2017)
Conclusions on Organic

- Lower, but depends on...
- Higher per unit area, uncertain per unit output, depends on...
- Mostly higher, but high uncertainties... depends on...
There is nothing black and white about organic agriculture

M. C. Escher, Day and Night
Thank you!
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