

The background of the slide is a solid green color with a repeating pattern of white icons representing various organic products. These icons include vegetables like carrots, tomatoes, mushrooms, and leafy greens; fruits like apples, pears, and berries; and animal products like cows, sheep, pigs, and chickens. The icons are arranged in a grid-like fashion across the entire slide.

# Organic approach to soil health

Organic farming – a holistic sustainable soil management practice

CDG on environment and climate, 6 July 2023

# Soil health – a cornerstone of organic farming

- Soil hosts more 25% of the global biodiversity but 60-70% of soils in the EU are unhealthy
- Organic has a unique approach to develop soil fertility
- Creating and sustaining a 'living' soil was the objective of one of the first organic associations, the Soil Association
- Key practices to improve soil health include cover crops, organic amendments, rotation diversity and length, and reduced tillage.
  - combating climate change
  - adapting to climate change and resilience against extreme weather events
  - preserving biodiversity
  - reducing erosion



The Principle  
of Health.



The Principle  
of Ecology.

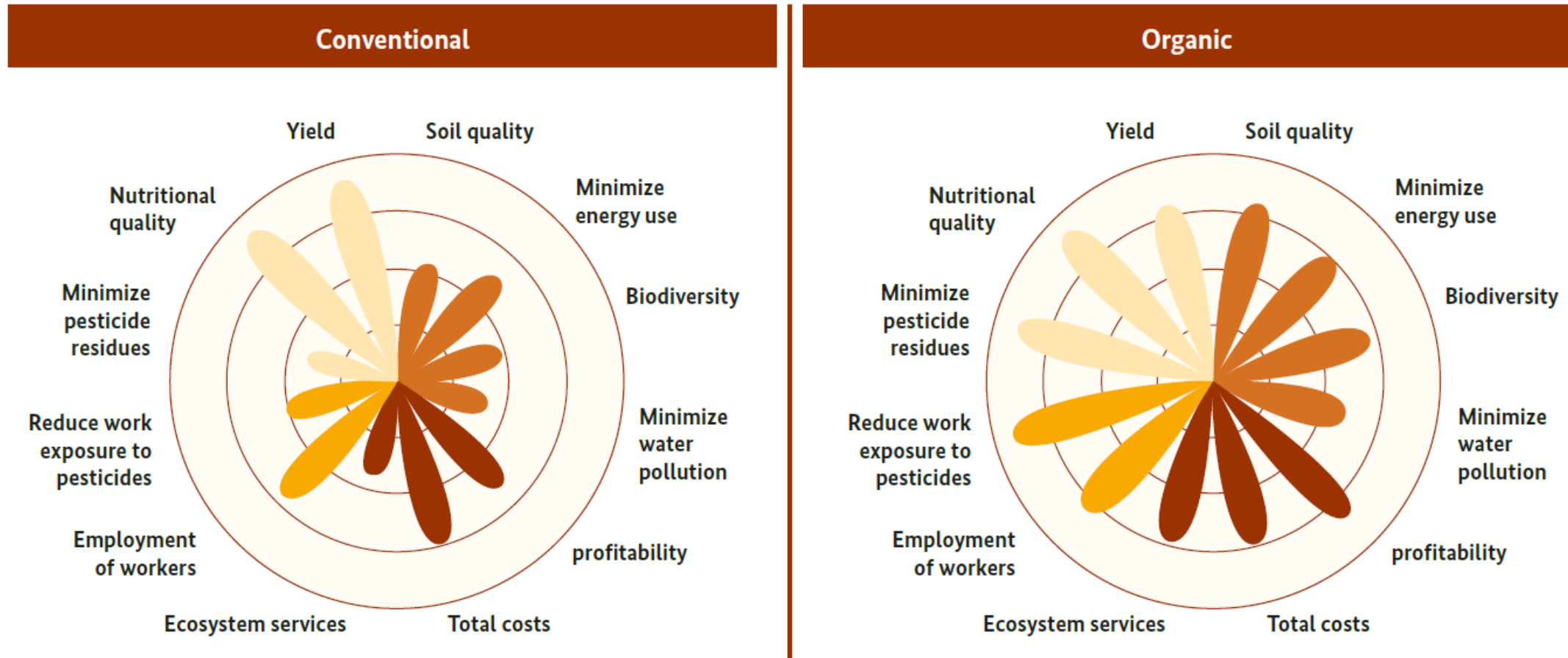


The Principle  
of Fairness.



The Principle  
of Care.

# The systems approach of organic farming

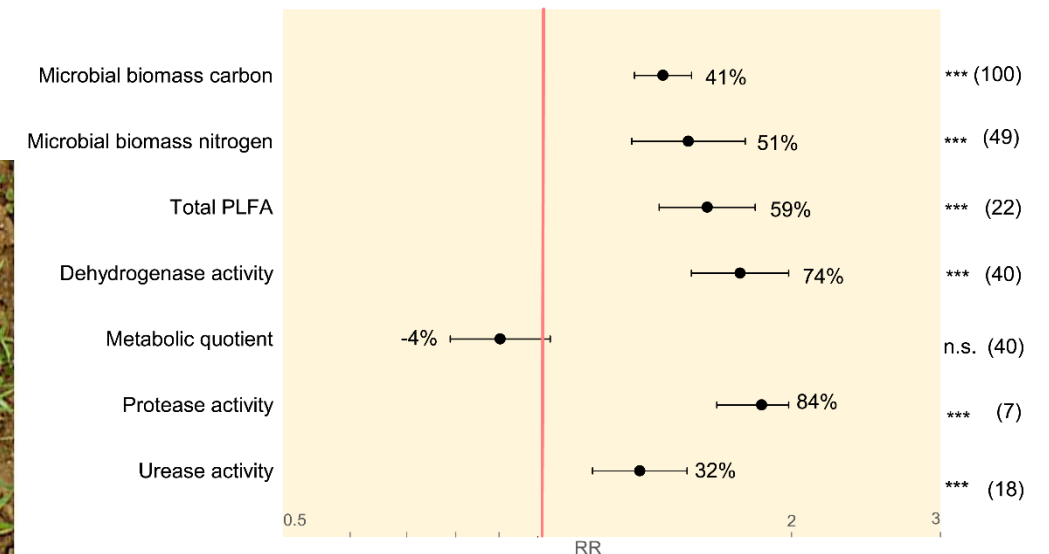


Performance of specific sustainability metrics relative to the four circles representing 25, 50, 75 and 100%.

REGANOLD, J. P. & WACHTER, J. M. (2016). Organic agriculture in the twenty-first century. in GIZ Ecosystem Soil.

# Maintaining or increasing soil organic matter

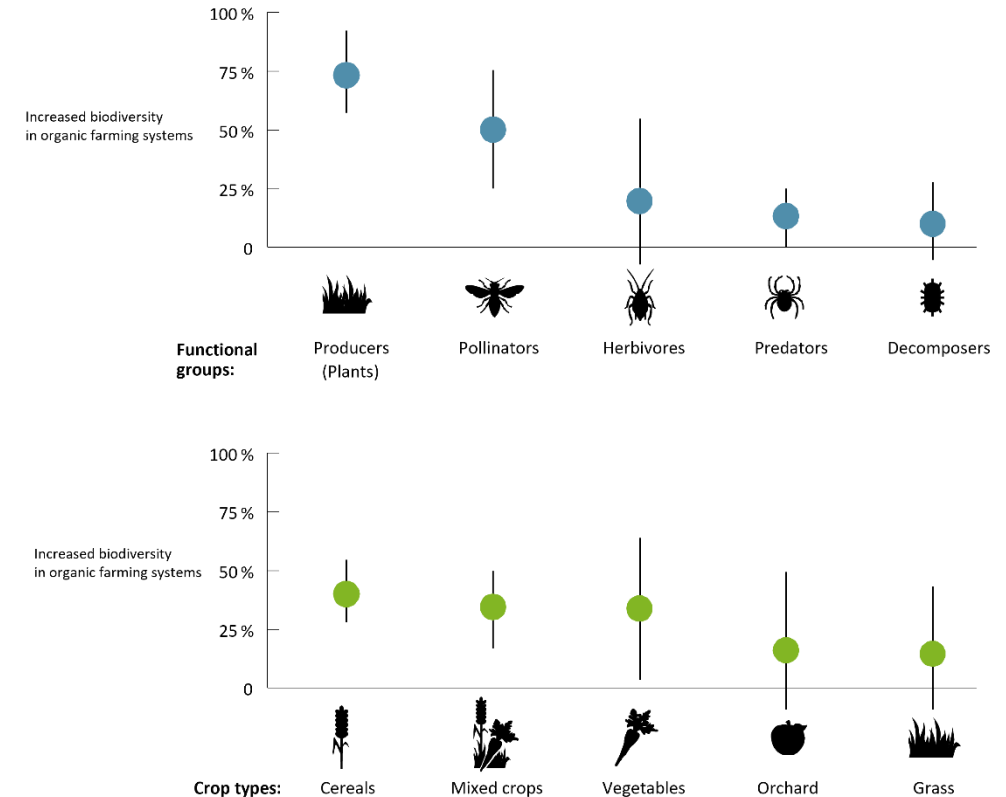
- 41% increase in microbial biomass carbon
- 51% increase in microbial biomass nitrogen
- SOM: create and maintain soil structure by improving soil aggregation, porosity, and water-holding capacity
  - promote better root growth, water infiltration, and aeration which is essential for plant growth
  - Habitat provision for soil microorganisms, which play a crucial role in nutrient cycling, soil structure formation, and disease suppression



LORI, M. SYMNACZIK, S. MÄDER, P. DE DEYN, G. & GATTINGER, A. (2017). Organic farming enhances soil microbial abundance and activity – A meta-analysis and meta-regression.

# Enhanced soil biodiversity

- Increased above and below ground biodiversity (30% more species on organic farm)
- Increased diversity of soil-dwelling arthropods, increased presence of earthworms, soil bacteria, fungi and mycorrhiza
- Positive impact on the activity of soil microbes and microbial communities



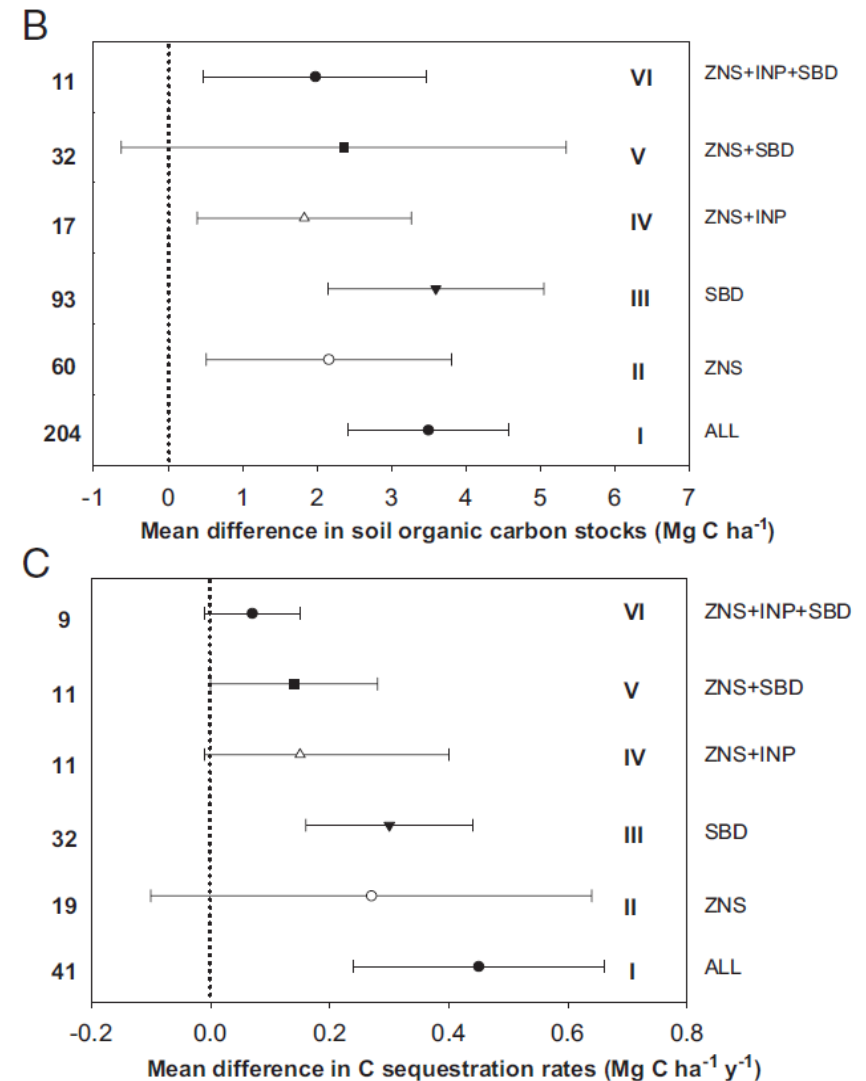
Data source: TUCK et al (2014). Land-use intensity and the effects of organic farming on biodiversity: a hierarchical meta-analysis.

# Increased carbon sequestration and higher soil organic carbon stocks

- Higher stocks: + 3.5t C/ha
  - Higher sequestration: + 450kg C/ha/year
- ...compared to land under conventional management

## How?

Organic fertilizer, improved crop varieties, crop rotations including legumes, reduced tillage and planting of cover crops



GATTINGER, et al. (2012). Enhanced top soil carbon stocks under organic farming.



# Improved water retention and conservation



- Increased organic matter content in the soil reduces soil density and enhances soil porosity
- Higher water holding capacity during dry periods
- 28-39% reduction in nitrate leaching

# Prevent and reduce rate of soil erosion

- Reduction of surface run off by 22%
- Reduction of soil erosion by 26%
- Protecting the soil surface, reducing runoff, and improving soil structure, minimizes the loss of topsoil, which is rich in organic matter and essential nutrients.





# Enabling healthy agricultural soils



- **Organic farming** is a proven holistic approach which supports building healthy soils and should therefore be considered as a leading **measure of soil protection and restoration of agricultural soils**.
- The Soil Law should leverage the **potential of organic and agroecology** to improve soil health and deliver on climate and other ecosystem functions.
- Farmers need access to information. Effective **advisory services** are key to enable knowledge transfer.
- Farmers need to be supported financially by adequate **policy instruments**.