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Key challenges in organic farming

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DELIVERING THE EUROPEAN GREEN DEAL
THE DECISIVE DECADE

Organic farming is an environmentally-friendly practice that needs to be further developed.

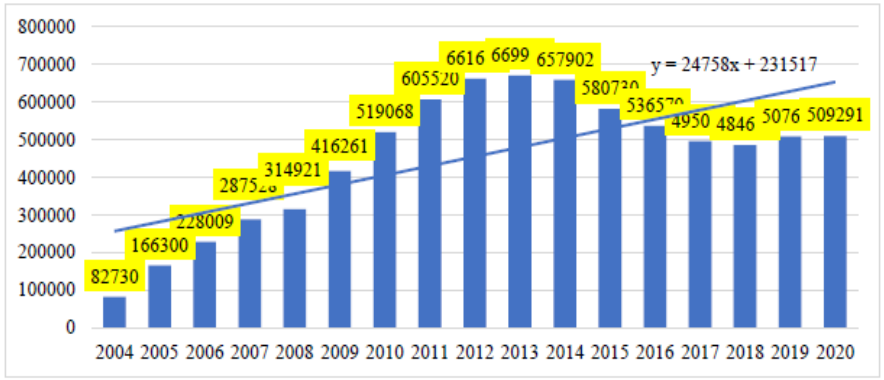
The Commission will boost the development of EU organic farming area with the aim to achieve

25% of total farmland under organic farming by 2030

Targets of selected EU countries for share of organic farmland in 2030

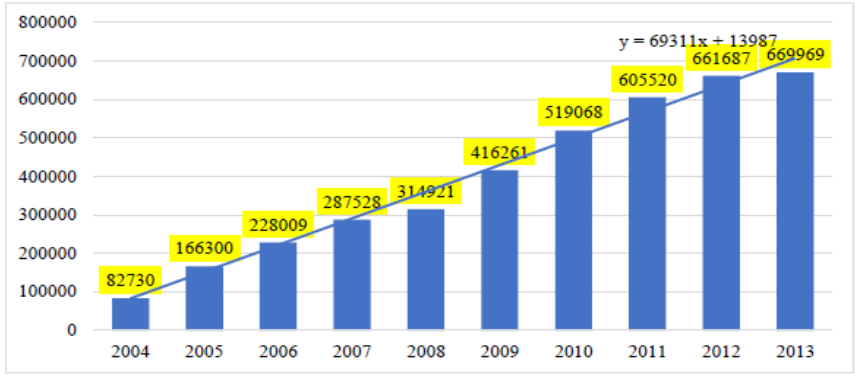
EU Country	Share (in %) of organic farmland in 2021	Aim (in %) of organic farmland area in 2030
Austria	26,5	30
Denmark	11,4	30
Czech Republic	15,8	25
Croatia	8,1	15
Finland	14,4	25
France	9,6	25
Germany	10,8	30
Italy	16,7	25
Spain	10,8	25

Scenarios of organic farmland development in Poland until 2030



Realistic scenario - determined on the basis of the trend of changes in the area of organic farmland from 2004 to 2020

Share of organic farmland in 2030 (1 mln ha) – 6%



Optimistic scenario - determined on the basis of the trend of changes in the area of organic farmland from 2004 to 2013

Share of organic farmland in 2030 (2 mln ha) – 13%

Share of organic farmland in 2022 (555 tyś ha) – 3,8%

Key challenges in organic farming

- **Yield gap and low competitiveness of organic farming** in relation to conventional agriculture
- **Increasing specialisation** of organic agricultural production
- **Conventionalisation and globalisation** of organic market (increasing carbon footprint of BIO products)

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Contents lists available at SciVerse ScienceDirect

Agricultural Systems

journal homepage: www.elsevier.com/locate/agsy

The crop yield gap between organic and conventional agriculture

Tomek de Ponti, Bert Rijk, Martin K. van Ittersum *

Plant Production Systems, Wageningen University, PO Box 430, 6700 AK Wageningen, The Netherlands

2012

A review of 362 yield comparisons between organic and conventional systems showed that **organically grown crops yielded lower by about 20% than in the conventional system.**

There was a large variation in yields by crop groups and region.

The analysis confirmed the hypothesis that the difference between organic and conventional yields increases as conventional yields increase, but the relationship was rather weak.

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Research

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Cite this article: Ponisio LC, M'Gonigle LK,

Diversification practices reduce organic to conventional yield gap

Lauren C. Ponisio[1], Leithen K. M'Gonigle[1,2], Kevi C. Mace[1], Jenny Palomino[1], Perry de Valpine[1] and Claire Kremen[1]

[1]Department of Environmental Science, Policy, and Management, University of California, Berkeley, 130 Mulford Hall, Berkeley, CA 94720, USA
[2]Department of Biological Science, Florida State University, Tallahassee, FL 32306, USA

2015

Diversification of organic farming through cultivation of **catch crops, intercropping, crop mixtures**, and **diversified rotations** can reduce yield differences to as little as **8-9%.**

nature COMMUNICATIONS

ARTICLE

DOI: 10.1038/s41467-017-01410-w OPEN

Strategies for feeding the world more sustainably with organic agriculture

Adrian Muller[1,2], Christian Schader[1], Nadia El-Hage Scialabba[3], Judith Brüggemann[1], Anne Isensee[1], Karl-Heinz Erb[4], Pete Smith[5], Peter Klocke[1,6], Florian Leiber[1], Matthias Stolze[1] & Urs Niggli[1]

2017

1. **100% conversion to organic farming will require more farmland** than conventional farming, but **reduces surplus of N and pesticide use.**

2. However, combined with a **reduction in food** losses, with correspondingly **reduced feed production** and **consumption of animal products**, **land use in organic agriculture would remain below the baseline scenario.**

How to improve crop yielding in organic farming? *(A concept)*

Eco-functional intensification (EFI) (Halberg et al., 2015)

1. Using the self-regulating mechanisms of organisms and of biological or organizational systems in a highly intensive way
2. Intensification of the beneficial effects of ecosystem functions, including biodiversity, soil fertility and homeostasis
3. Closing material cycles in order to minimize losses (e.g. compost and manure)
4. Searching for the best matches between environmental variation and the genetic variability of plants and crop

How to improve crop yielding in organic farming? *(Implementation)*

1. Optimising crop rotation
2. Improvement of the crop management:

- *nutrient management*
- *choice of appropriate variety*
- *crop protection (bioherbicides)*
- *good seed quality*

Organic Variety Testing (EDO)

1. The key objective of EDO is to assess the **suitability of different crop varieties for cultivation under organic farming**
2. The **system was established in 2018** in cooperation with the Central Research Center for Cultivated Plant Varieties in Slupia Wielka (COBORU)
3. Key crops included in testing are**: spring and winter cereals** (wheat, rye, barley and oats) and **grain legumes**
4. **In 2022** in total **141 experimental EDO field** plots were established in Poland

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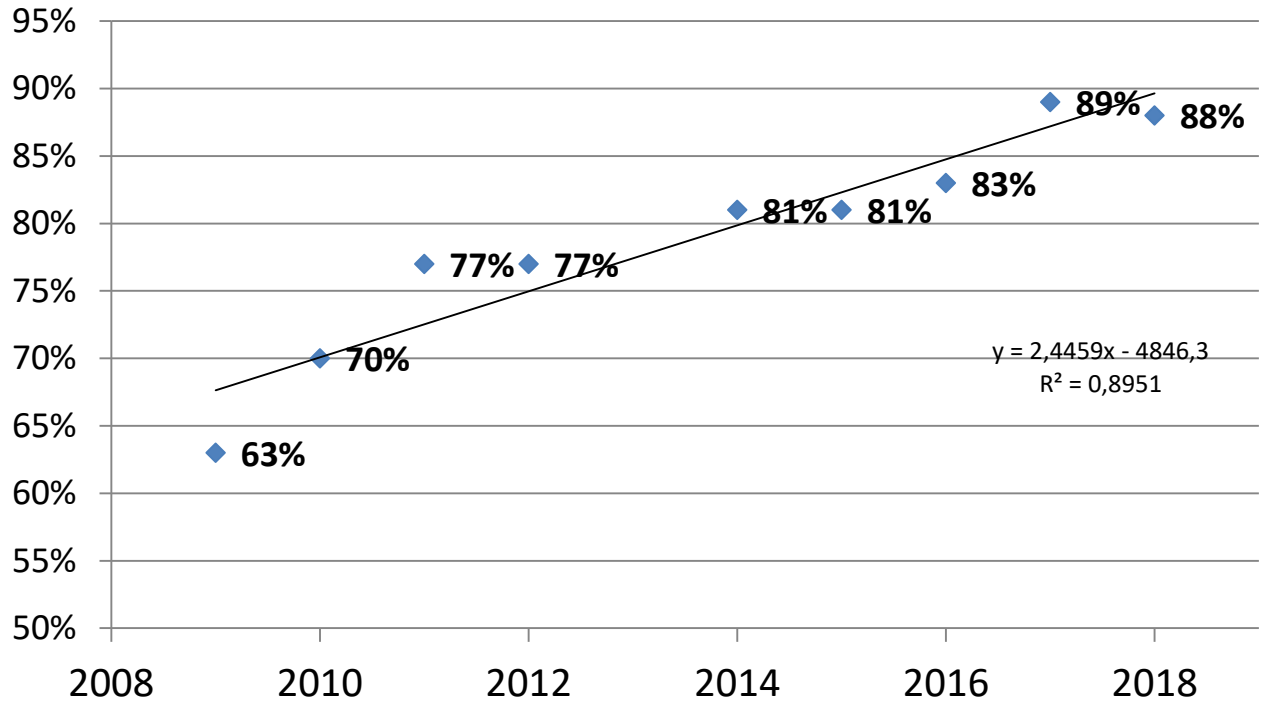
Share (in %) of stockless farms in total number of organic farms in Poland in 2009-2018



(*Source: own calculations based on data from IJHARS Reports*)

Soil organic matter balance (in t DM·ha-1 of arable lands) in 3 groups of organic farms

Agricultural profile of farms	Impact of crops	Impact of organic fertilizers	**Balance**
Crop	-2.03	1.30	**-0.73**
Mixed	1.70	1.94	**3.64**
Animal	-0.35	2.62	**2.27**
Average	**-0.29**	**1.98**	**1.69**

Source: Stalenga J., Kopiński J. 2018. Is it possible in specialized organic farms to maintain in soil appropriate content of nutrients and organic matter? *Journal of Research and Applications in Agricultural Engineering* 63(3): 86-91.

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Stronger support needed in reorientation of the organic market towards short supply chains based on local food production

Food cooperatives

Box delivery schemes

Community-supported agriculture (CSA)

Internet platforms

Specialized BIO markets

Open street markets

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Thank you for your attention !

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