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Can Organic feed the world?

How worldwide conversion to organic farming and responsible consumption contribute to a sustainable food system

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The Contribution of Organic Agriculture to the SDGs: Scientific evidence from comparative research

February 26 2019, Brussels

Land use



Scenarios; percentage shares in organic production (reference: 0% organic)



Scenarios; percentage shares in organic production (reference: 0% organic)



Scenarios; percentage shares in organic production (reference: 0% organic)





Is land use and yields an interesting topic? It is one sustainability indicator among many others



What does «feeding the world» mean?





- Over 9 Billion people in 2050
- FAO: over 3000 kcal/cap/day
- High shares of animal protein in diets













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Muller et al. 2017; Courtesy: R. Zürcher

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Nutrient supply

Not only the products but also the fertilizers are grown on the areas

Adequate nitrogen supply could become a challenge



u	ed				Clim	ate ch	nange i	mpact	on yi	elds										
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> 10kg/ha	Surplus
between 10 and 5kg/ha	Optimal
between +5 and -5 kg/ha	Critical
<-5kg/ha	Deficit

on	eq				Clim	ate ch	nange	impa	ct on	yields									
ducti	n in ting fe			Ze	ero					Me	edium					Hi	gh		
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	100	13	10	6	2	-2	-6	1:	9	5	2	-2	-6	11	8	4	1	-3	-6
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Surplus Optimal Critical Deficit

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	100	11	8	5		-3	-	7	10	7	4	1	-3	-7		10	7	3	0	-3	-7	Deficit

Again: land use and N-surplus

are only two sustainability indicators among many others



Ultimately, we are not interested in this dichotomy of conventional versus 100% organic.





tion	eed				Clin	nate c	hange	impac	t on y	ields										
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ы	% Reduction in ood-competing feed	Climate change impact on yields																	
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	100	15	11	7	3	-1	-5	13	10	7	3	-1	-5	12	9	5	2	-2	-6
	0	23	19	14	8	2	-4	21	17	12	7	1	-4	19	15	10	5	0	-5
25	50	18	14	10	6	1	-5	17	13	9	5	0	-5	15	11	7	3	-1	-5
	100	13	10	6	2	-2	-6	12	9	5	2	-2	-6	11	8	4	1	-3	-6
	0	21	17	12	7	1	-5	19	15	10	5	0	-6	17	13	9	4	-1	-6
50	50	16	12	8	4	0	-6	15	11	7	3	-1	-6	14	10	6	2	-2	-6
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Can organic agriculture feed the world sustainably?

How do we measure sustainability? per unit produce per area total aggregate







Can organic agriculture feed the world sustainably?

How do we measure sustainability? per unit produce per area total aggregate

Ultimately, we are not interested in this strong focus on the yield gap – we need a food systems approach that also addresses consumption

Organic agriculture and sustainable food systems

Diets and consumption





Conclusions I

- It is important to discuss what «feeding the world» means:
 - Animal products / waste
- It is important how we measure sustainability:
 - Per kg, per ha or in total; not only GHG emissions...
 - Land use and yield gaps must not dominate the discussion
- Sustainable production cannot be discussed without addressing consumption and processing – i.e. without addressing the whole food system
 - Efficiency consistency sufficiency



Sustainability (various dimensions)

Conclusions II

- It is important to discuss what «feeding the world» means:
 - Animal products / waste
- It is important how we measure sustainability:
 - Per kg or per ha; not only GHG emissions...
 - Land use and yield gaps must not dominate the discussion
- Sustainable production cannot be discussed without addressing consumption and processing – i.e. without addressing the whole food system
 - Efficiency consistency sufficiency

• Organic agriculture is a role model, but it is no panacea

- Trade-offs and synergies
- 100% organic and "feeding the world" narratives are not the key aspects for discussions on sustainable agriculture and food systems