

The impact of different nutrition patterns and agricultural production systems on greenhouse-gas emissions

International scientific and professional conference
Organic agriculture and climate change

April 17th- 18th, 2008

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Outline

1. Introduction
2. Results
3. Conclusions



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Background

1. Agriculture is a result of consume patterns
2. Therefore, agriculture alone is not able to reduce their own produced carbon emissions, if the consumers do not participate
3. Additionally consumer habits affect the C-emissions



Objectives

To investigate the influence of consumer decisions on GGE in the sector of human nutrition:

1. To identify the GGE of different products
2. To identify the amount of products linked zith different consume patterns
3. To identify the consequences of modified consume patterns (bio-conv. / high meat-low meat)

Methods

1. Austrian food consumption patterns
2. Recommendations for human nutrition – German Society of human nutrition
3. GEMIS data for the calculation of the GGE including the production of agricultural inputs until the table of the consumer



Scenarios

- **Scenario 1:** Status quo: conv. agriculture/nutrition-average: average of Austrian nutrition pattern with conventional products.
- **Scenario 2:** org. agriculture/nutrition-average: average of Austrian nutrition pattern with bio-products.
- **Scenario 3:** conv. agriculture/nutrition-opt.: optimised nutrition pattern according to science-based recommendations with conventional products.
- **Scenario 4:** org. agriculture/nutrition-opt.: optimised nutrition pattern with bio- products.



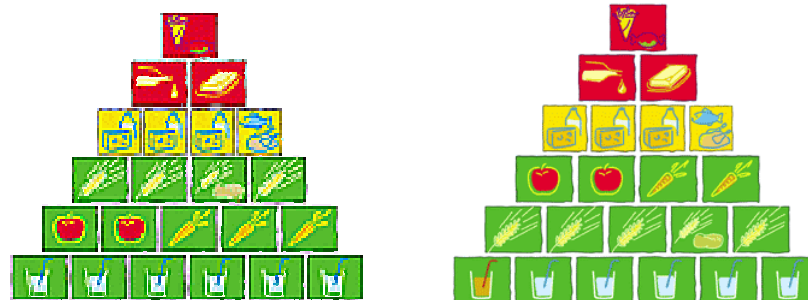
2. Results

Impact Factor	Emission Share %	Impact Factors - Breakdown	Emission Share %
Agriculture	52	Animal Production Plant Production	44 8
Processing (Industry, Handcraft)	6		
Trade/Distribution	13	Packaging Transportation Diverse	5 5 3
Consumer Activities	29	Heating (Kitchen, Dining room) Cooling Restaurants Shopping Cooking Dish Washing	9 6 4 4 3 3

Table 1: Impact factors on nutritional greenhouse gas emissions in Germany

Source: Koerber und Kretschmer (2000), Shares given relate to the percentage of annual CO₂-equivalents of agriculture and nutrition in Germany

2. Results



Adult

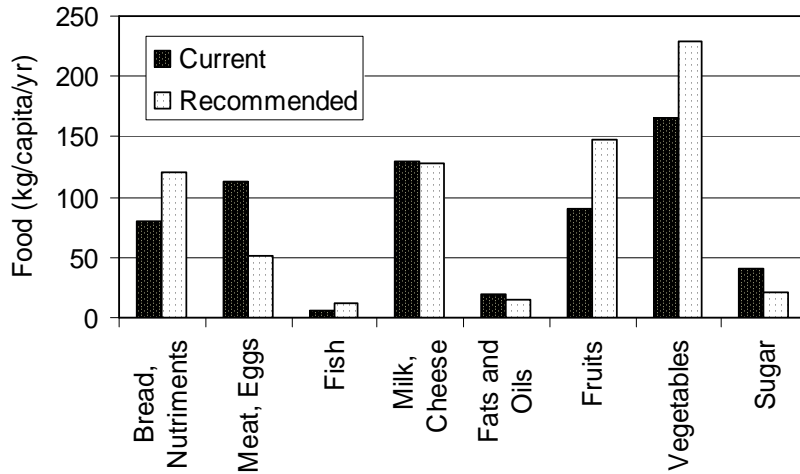
Children

Source: aid-information 2007

Figure 1: Recommended consume patterns

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2. Results



Source: own

Figure 2: Comparison of total food consumption for current Austrian nutrition and recommended intake in kg FM person⁻¹ yr⁻¹

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2. Results

Scenario	Human consumption		Reduction in comparison to conv.-status quo	
	kg Person a ⁻¹	kg CO ₂ -e.	kg CO ₂ -e.	%-Reduction
Conv. Production Human nutrition status quo	644	1230	-	-
Ecol. Production Human nutrition status quo	644	856	-374	-30
Conv. Production Human nutrition DGE recommend	723	1031	-199	-16
Ecol. Production Human nutrition DGE recommend	723	742	-489	-40

DGE=German Society for Nutrition (inclusive – 60% meat consumption (70/35kg))

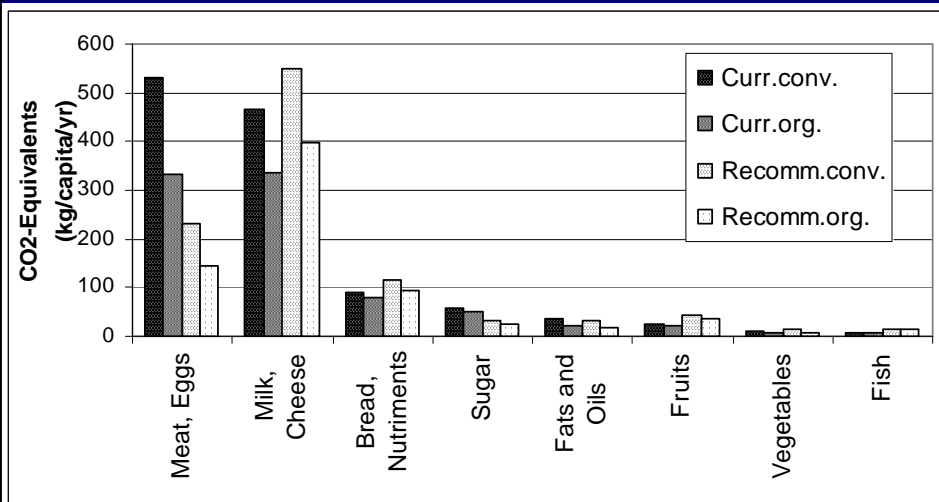
Table 2: Scenarios on greenhouse-gas emissions based on agriculture system and nutrition patterns



Source: Weik & Freyer 2008

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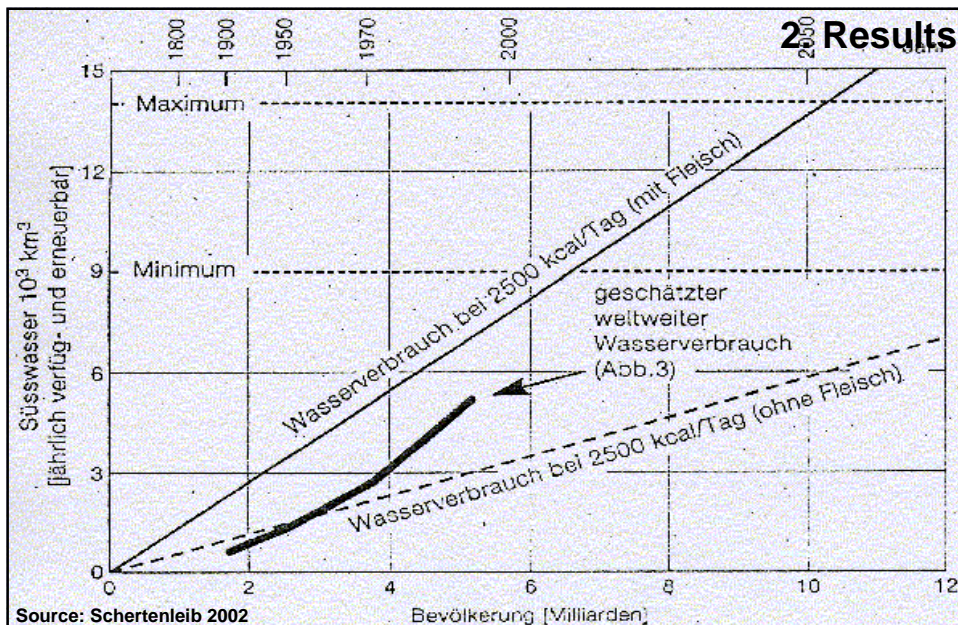
2. Results



Source: own

Figure 3: Greenhouse-gas emissions for product groups and nutrition patterns

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Source: Schertenleib 2002

Figure 4: Relation between meat consumption and water consumption

3. Conclusions

1. ...connect the consumers with soil fertility; ... you can eat meat, but...
2. The change of consume patterns is a precondition for Organic Agriculture to contribute seriously to feed the world
3. Vegetable and fruit production is in the centre, but in research and practice there is a lack of activities



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Thank you for your attention

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