

# Sustainable diet approach

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# Faculty of Organic Agricultural Sciences

- Focus on organic agricultural education  
→ prominent position in the German & international university landscape with its definitive organic profile.
- Interdisciplinary & open-minded education
- Main teaching topics:
  - maintenance of nutrient cycles,
  - the reflected use of means in organic agriculture and food production,
  - balanced relation between productive and 'non-productive' areas such as landscape protection
  - research along the food chain including marketing, nutrition cultures as well as consumer studies
  - and the link between agricultural practice, regional market and rural development.
- Inter- & transdisciplinary approach in teaching / multinational teams
- High awareness of social responsibility to ensure sustainable food security

# Section: Organic Food Quality & Food Culture

- The central theme in teaching, research and knowledge transfer is the **contextual relationship** between healthy diets & sustainable food systems
- Master courses:
  - International Food Business & Consumer Studies (with the Fulda University of Applied Sciences)
  - Sustainable Food Systems (with the Fulda University of Applied Sciences)
  - Sustainable International Agriculture (with the University of Göttingen)
- Methods:
  - Inter- & transdisciplinary
  - seminar style with a mixture of lecture, group work and other forms of interactive learning (also IT-based)
  - individual presentations
  - exemplary testing of concepts based e.g. on given case studies is part of the individual services (e.g. application of QACCP models, sustainable cookbook)



# Idea of the course

# Basic information

- Module in the International master programme at the University of Kassel in the Department Organic Food Quality and Food Culture / Prof. Dr. Johannes Kahl
- 8h per week, 9 weeks per semester (72h)

# Intended learning outcomes

- Knowledge: Students are able to describe the interactions of diets, sustainability and human nutrition/health.
- Skills:
  - Students are able to assess the impacts of a dish/meal on sustainability and nutrition parameters
  - Students are able to think target oriented
- Competences: conceptual understanding of how nutrition, culture and sustainability are linked

# National dish

- Binding element for the course topics



- Concrete & personal entry point for the students

# Topics of the course (I)

Nutritional guidelines



Sustainability

Sensory analysis



National dishes work

Geographical indications & terroir



MedDiet & New Nordic Diet



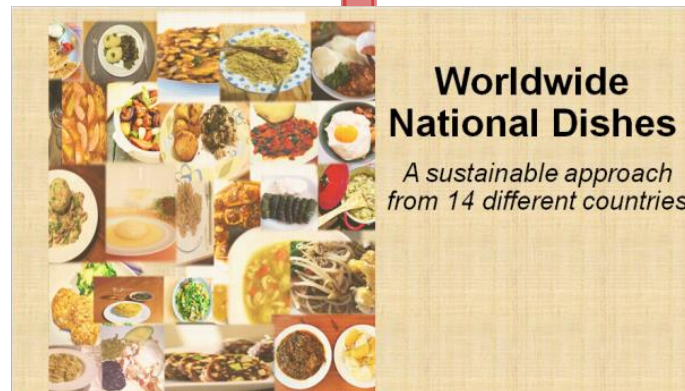
# Topics of the course (II)

Traditional knowledge



Cooking & Eating

Presentations



# Contents

- Culture and cultural patterns of diets
- Interactions of food quality and lifestyle on sustainability and human health
- Healthy diets within sustainable food systems
- Model diets such as Mediterranean Diet and New Nordic Diet
- Agenda 2030 / Sustainable Development Goals
- Life Cycle Assessment (LCA)
- Optimization of a dish/meal according to sustainability and nutritional impacts
- Role of organic food systems

# Mix of methods

- Lectures
- Individual & group work
- Presentations of students
- Written summaries
- Cooking & Eating in Organic Food Lab

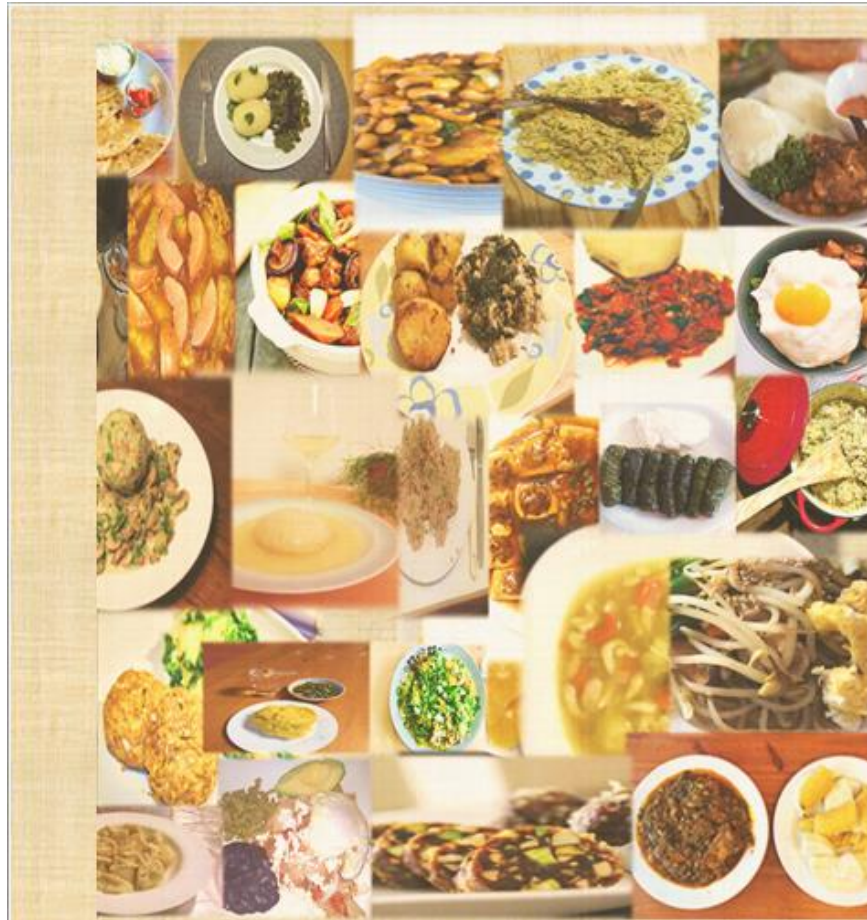
# Assignments

- Presentation on how the national dish has been optimized towards enhanced sustainability and health (7-10 Min, max. 10 slides)
- Short written summary of the assignment (2 pages) as part of the cook book
- Presentation (3 Min, 3 slides) on another national dish, selection of 3 dishes per group & cooking together in the Food Lab (2 groups)



# Materials

# Cook book

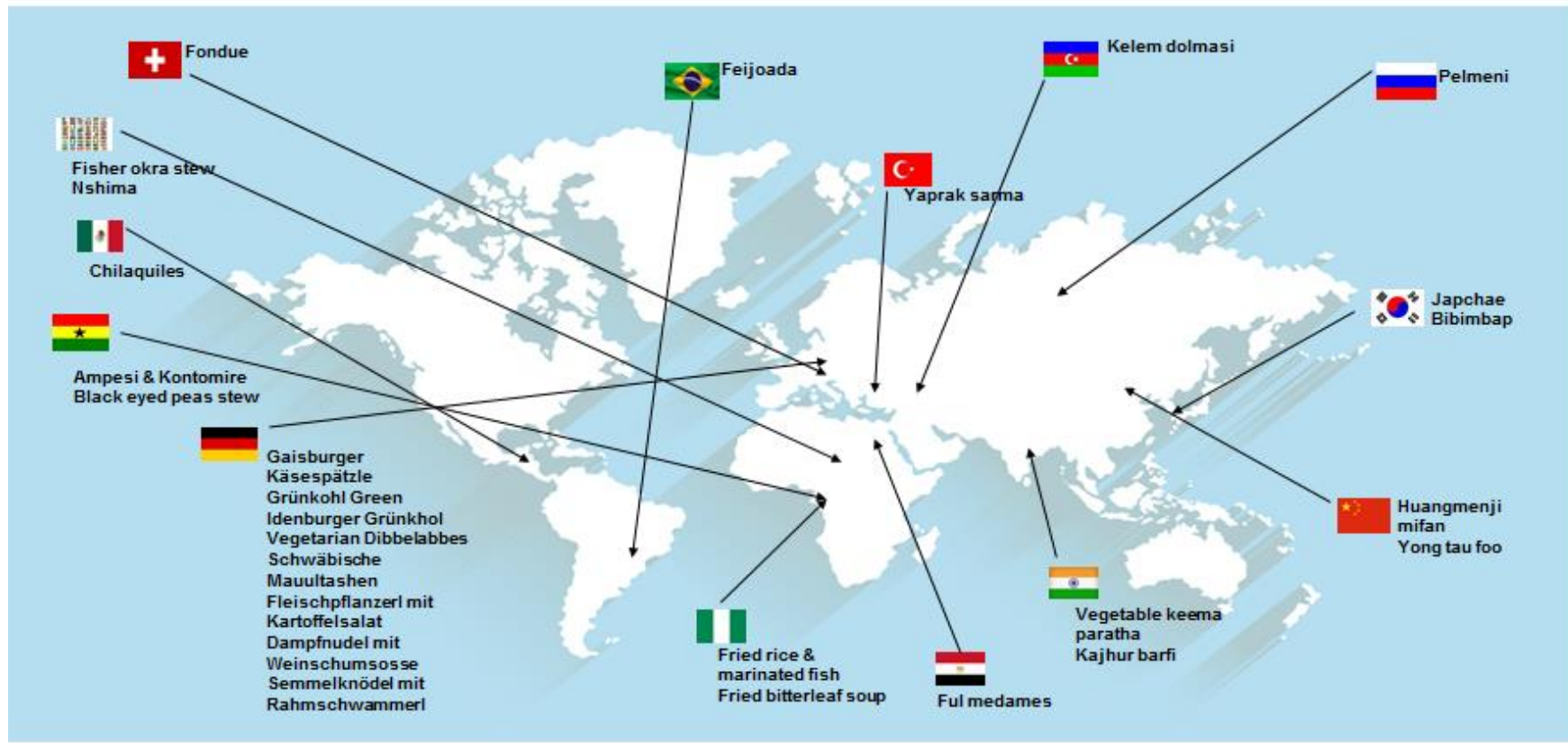


## Worldwide National Dishes

*A sustainable approach  
from 14 different countries*

# Cook book

## Map Of The National Dishes



# Cook book

## EGYPT

### Ful Medames - Lo'ma

By Abdallah Elshamy

#### Ingredients: (4 persons)

- Fava beans 448 g
- 168 g lentils 168 g
- Whole wheat 84 g
- Red kidney beans 84 g
- Lentils 42 g
- Green peas 28 g
- Onions (chopped) 40 g
- Springs onions 4 g
- Dill 4 g
- Parsley 10 g
- Green onions 24 g
- Garlic cloves 12 g
- Lemon (wedges) 30 g
- Rapeseed oil 30 ml
- Coriander seeds 8 g
- Cumin seeds 8 g
- Curry 8 g
- Turmeric 8 g
- Marjoram 4 g
- Oregano 4 g
- Thyme 4 g
- Pepper 8 g
- Salt 8 g

#### Preparations: (1 hour)

Leave fava beans, whole wheat, green peas and kidney beans to soak in water for (12) hours (mix A). Put mix A in a big pot that has a cover with a small opening allowing the steam to escape, then put the raw onions, (6) cloves of garlic and (1) lemon wedge (mix B). After boiling, reduce the heating source to the minimum and leave the mix B to cook for 6 hours at least. Add the lentils after 4 hours of cooking. After 6 hours of cooking, use a mixer to mash the mix B altogether. In a small bowl stir the herbs with lemon and rapeseed oil (mix C), then add the mix C on B and stir gently. Finally, garnish the plate with parsley, dill and green onions. Then, pour a little rapeseed oil on top. It is preferred to serve the four plates with bread (optional).

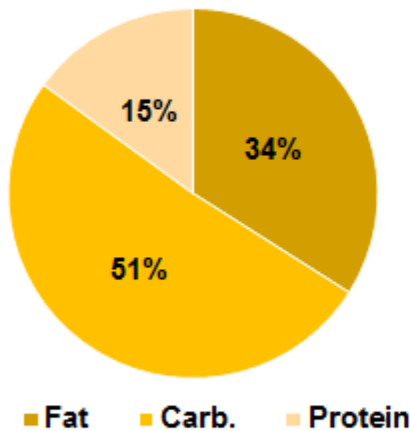




# Cook book

## Health and Sustainability Aspects of the Dish

Energy content per person: 1757.28 KJ



### Content per person in grams (g):

Carbohydrate: 56 g  
Dietary Fiber: 14 g  
Total Fat: 17 g  
Protein: 20 g



The diet has been optimized to fit the local crops and vegetables from local farmer, such as Gut Fahrenbach GbR and Hessisches Hochland, in Witzenhausen.

- Only some of the herbs are repacked in Germany

### Plant : animal protein ratio

1 : 0, no meat or meat products content

### Fruits and vegetables consumption

314 g per serving

### Degree of (pre-processing)

Low-Medium

### Diversity of food ingredients

High

### Rate of local food and seasonality

High

### Rate of eco-friendly food

High

### Adherence to Mediterranean diet

High

By Abdallah Elshamy

# Cook book



<http://www.e-pages.dk/ku/1381/>

# Work on national dishes (I)

- 1. Selection of a traditional meal or dish from the home region
- 2. Description of the foods, their origin production incl. pre-processing
- 3. Description of the recipes for each part of the meal, also tradition and cultural background
- 4. Description of the qualities of the dish including way of eating and preparation

# Work on national dishes (II)

- 5. Analysing the impact of the dish and the foods on sustainability and health indicators
- 6. Develop strategies for improvement of the meal/dish including the way of production towards better health and sustainability on all levels (foods, recipes, meal)



# Product Carbon Footprint Calculation

# PCF of potato crisps

A company produces 1 ton of potato crisps per year.

Out of one kilogram potatoes they produce 300g potato crisps. During processing they need 5 l of plant-based oil to fry 50 kg potatoes. Furthermore, they use 0.43 kWh of electrical energy and 0.90 kWh of process heat for frying and peeling of 1 kg potatoes.

Moreover, per kilogram potato 150g of potato husk are produced, which will be sold as feed.

The potato crisps will be packed in units of 200g, with a packaging weight of 5g per 200g package. The packaging consists of LDPE. During the packaging process 1 per cent of losses occur, which will be disposed.

Distribution is organised through retailers. The company delivers the crisps to the wholesale warehouses. The average distance between the company and the wholesalers' warehouses is 250km, the distance between wholesalers and retail shops is in average 100km.

**Please be aware that the mentioned figures are just estimates and do not necessarily represent the real situation of potato crisp production in a company!**

# Selected data

Activity/product	Amount	Unit	Source
Potato production (DE, 2010)	0.069	kg CO <sub>2</sub> e/kg	GEMIS 4.93
Cooled storage of potatoes (DE, 2010)	0.053	kg CO <sub>2</sub> e/kg	GEMIS 4.93
Rape seed oil (DE, 2010)	1.466	kg CO <sub>2</sub> e/kg	GEMIS 4.93
Process heat food industry (EU, 2010)	0.342	kg CO <sub>2</sub> e/kWh	GEMIS 4.93
Electricity grid (DE, 2010)	0.606	kg CO <sub>2</sub> e/kWh	GEMIS 4.93
Packaging (LDPE, generic)	1.839	kg CO <sub>2</sub> e/kg	GEMIS 4.93
lorry transport, 40t	0.086	kg CO <sub>2</sub> e/tkm	TREMOD 4.17
lorry transport, 7.5t	0.389	kg CO <sub>2</sub> e/tkm	TREMOD 4.17

# Task

Please calculate the PCF:

- Goal & scope definition (i.e. functional unit, system boundaries)
- Modelling (calculator)
- Life Cycle Impact Assessment
- Interpretation

**Please present your results shortly (5 min)!**



# Presenting PCF calculation results



# Cooking & Eating

