Processing of Organic Food
Topics of the Department: Food Quality
1 hour and 43 minutes per day for food
1 hour and 6 minutes/day
women take time to shop and prepare
23 minutes/day male (DGE, 2004)
Topics of the Department: Food Culture
Organic is an fast growing market

**Sales in Euros per Capita in 2008**

- Denmark 132,3
- Switzerland 119,2
- Austria 97,4
- Germany 71,2
- Sweden 67,8
- **Average EU** 25,8
- **USA** 50,7 (+16%)
Quality is defined as “the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs”

ISO 9000, 2005
What are the problems?

Quality definition…stated or implied needs?

characteristics of a product?

from farmer?

from processor?

from trade?

from consumer?

Definition of Quality

What do I expect as a nutritionist?
Expectations Organic Food

- Product quality
- Process quality

Wide range of reasons to buy

They want to feel good buying organic

Definition of Health WHO 1942
What’s defining an “organic” sample?

Farming system

Processing

Health
Well-being

Nutrients

Bioavailability
Consumers Expectations Organic Food

First consideration

Product quality

Process quality

More selfish reasons to buy

Conflict of interests !!!!
Organic food — eat the emotion, but question the evidence (Lancet, August 8th, 2009)

Last week, the UK’s Food Standards Agency (FSA) released a systematic review that .... The review failed to show a difference between the two sources of food, a result that was not what the organic food movement wanted to hear ....
Review on Publications

Comparison of composition (nutrients and other substances) of organically and conventionally produced foodstuffs: a systematic review of the available literature

Report for the Food Standards Agency
Nutrition and Public Health Interventions Research Unit
London School of Hygiene & Tropical Medicine

Comparison of putative health effects of organically and conventionally produced foodstuffs: a systematic review

Report for the Food Standards Agency
Nutrition and Public Health Interventions Research Unit
London School of Hygiene & Tropical Medicine

Is this topic new?
• higher vitamin and CLA content in organic milk and dairy products
• higher level of omega-3-fatty acids in organic milk
• in fruits and vegetables higher content of phenolic compounds, flavonoid (secondary plant compounds)
(Leifert, 2005)
Quality factors
secondary plant compounds

Variety

> Climatic conditions (temperature, precipitation)

> Location (e.g. Soil)

> Farming system (e.g. organic)
Is organic better?

Second consideration

Review of publication show that variety has a greater impact on food quality than agricultural systems

1. Therefore variety should be part of the Organic Agricultural System

2. Comparisons should be based on variety and comparable soils
What is about Processing Organic Food?
From Farm to our table

Underlying Principles in Organic and “Low-Input Food” Processing – Literature Survey
Main objectives:

1. to identify the different underlying principles proposed for organic and other “minimum” and “low input” food processing

2. to analyse current approaches and concepts in organic food processing

3. to identify differences in processing standards/regulations in Europe in order to identify areas for harmonisation and revision and further development
Study design

The synthesis of this work is based on:

- A literature survey
- A Delphi expert survey with 120 food processing specialists in Europe
- A analysis of consumer studies and the relevant regulatory framework
- Elaboration of recommendations by the consortium involved in the project
Reasons why to reflect more about principles in organic food processing?

- Increasing demand for more processed organic food (long shelf life, convenience)
  => challenge for the organic food sector
- Frequent discussions to the underlying principles on organic food processing
  => revision of the EU Regulation 2092/91/ New Regulation 834/2007
- Consumer demand of organic food with a high quality regarding different quality parameters like sensory quality, health aspect and the use of additives
- To link the ideas and expectations regarding organic processed food from the field to the fork
Standards of Processing Organic Food?

All standards consist of:
- Certified quality and traceability management system
- positive lists of methods and inputs used
- special labelling provisions for ingredients
Underlying principles for organic food processing

Concepts of organic food processing
- Organic ingredients
- Certified production chain
- Minimised use of additives
- Careful processing, freshness
- Healthy nutrition, natural concepts
- Environmental friendly processing and transport
- Socially responsible, fair trade, regionality

Authenticity/True nature
In the EC regulation No. 834/2007, organic production is defined as "...a production method in line with the preference of certain consumers for products produced using natural substances and processes" (EC No.834/2007, (1))
• **Processing methods**, which are allowed by the regulation, should “guarantee that the organic integrity and vital qualities of the product are maintained through all stages of the production chain”

• (EC No. 834/2007, (19))
The specific principles that are applied to the processing of organic food exclude substances and describes processing:

- „that do not harm ... human health” (Article 3,c)
- “that might be misleading regarding the true nature of the product” (Article 6,c).
- „processing should be done with care“ (Article 6,d)
Use of natural raw materials
Welfare orientated animal husbandry
Environmentally friendly land use
Environmentally friendly processing techniques
Trend more convenience
Trend longer shelf life
Which criteria are important for an organic product to be successful on the food market?

From 12 possible criteria

- The most important criteria was **sensory quality**
- The second most the **minimum use of additives and processing aids**
- Third most **freshness**, followed by **authenticity**

-> all quality aspects that are recognizable to the consumer

The aspect health is for the experts in the food processing sector an important but not the most important aspect.
Research needs: proposals of the experts

- Research needs were mostly named regarding:
  - minimum use of additives
  - careful processing
  - develop suitable production and processing methods in respect to the requirements

- General focus of future research regarding food processing should be on **premium, sustainable produced quality**, to upgrade the sensory quality of processed organic food.
Problem: Definition of terms

Food Quality

- Natural substances and processes
- Processed with care
- True nature
- Vital qualities
- Organic integrity
- Authenticity
All natural?
Values in IFOAM principles

- **Health**
  - E.g. soil & plant health
  - Food quality

- **Ecology**
  - E.g. reduced input use
  - Self regulation

- **Fairness**
  - E.g. Transparency
  - Food sovereignty

- **Care**
  - E.g. precaution & prevention
  - Excluding GMO

(Naturalness, Sustainability, System thinking)

(Derived from Padel 2007, based on IFOAM n.d.)
Is organic better?

Third consideration

• The EU-regulation on processing of organic food points out quality terms that are not defined nor can they be evaluated by methods.

• Food additives are limited but not processing techniques.
Careful processing is a method with technology, additives, aids and recipe.

Careful processing is always within a whole production chain, not just a segment (also raw material).

Careful processing is always related with a purpose (goal of production). There are different goals (e.g. preservation, new product).

The overall goal of careful processing is to increase the quality and safety of the product. Quality means product and process related aspect.

Careful processing is related to naturalness. It is within the views of nature and culture (man is always involved). PROBLEM! (see QLIF)
• “‘Organic’ is a labeling term that denotes products produced under the authority of the Organic Foods Production Act. The principal guidelines for organic production are to use materials and practices that enhance the ecological balance of natural systems and that integrate the parts of the farming system into an ecological whole”
What are the problems?

Quality definition USA

• “Organic agriculture practices cannot ensure that products are completely free of residues; however, methods are used to minimize pollution from air, soil and water.“

• “Organic food handlers, processors and retailers adhere to standards that maintain the integrity of organic agricultural products. The primary goal of organic agriculture is to optimize the health and productivity of interdependent communities of soil life, plants, animals and people.”

• USDA National Organic Standards Board (NOSB) definition, April 1995
Organic Food Claims in Europe

Better regulatory guidelines, improved testing methods, and additional research into product quality criteria are needed to further develop the European organic food market.

The market for organic foods in Europe is growing at a steady pace (Kummer et al., 2004; Weller and Youahn, 2016). However, as processing of organic food products has become more complex, multi-step processed products are the new so-called conventional products like dairies from ruminant sources.