

# GOODFOOD Project

## Good teaching practices in experiential learning for effective education in embedded food systems



Project No. 2020-1-PL01-KA203-082209

### O2 – E-learning course on 'Food systems embedded in territories':

#### Syllabus of the e-learning & all e-learning lectures

Project timeframes: 1st November 2020 – 31st October 2023

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GOODFOOD coordinating institution: Warsaw University of Life Sciences – SGGW (Poland); Project Partners: FH Münster University of Applied Sciences (Germany), I.S.A.R.A (France), University of Gastronomic Sciences (Italy), Agricultural University - Plovdiv (Bulgaria), University of Oradea (Romania). Intellectual Output Coordinator: Dominika Średnicka-Tober, Warsaw University of Life Sciences, email: dominika\_srednicka\_tober@sggw.edu.pl. All GOODFOOD Partners contributed towards the development of this Intellectual Output of the project. The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



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## **Introduction**

This document presents a syllabus of the GOODFOOD e-learning course “Food Systems Embedded in Territories” as well as syllabi of all e-learning lectures developed for the purposes of the programme, containing information on the titles of the lectures, their major goals, content, quiz questions, suggested reading materials, and questions for the students’ Moodle discussion forums).

## Syllabus of the GOODFOOD e-learning course

Number of the project	2020-1-PL01-KA203-082209
Title of the course	E-learning module: 'Food systems embedded in territories'
The institutions organising the course	<ul style="list-style-type: none"> <li>• Coordinator – Szkoła Główna Gospodarstwa Wiejskiego w Warszawie PL WARSZAW05 (SGGW)</li> <li>• Germany – Fachhochschule Münster – D MUNSTER02 (FHM)</li> <li>• Italy – L'Università degli studi di Scienze Gastronomiche di Pollenzo – I BRA01 (UNISG)</li> <li>• France – Institut Supérieur D'agriculture Rhone Alpes I.S.A.R.A – F LYON17 (ISARA)</li> <li>• Bulgaria – Agraren Universitet – Plovdiv - BG PLOVDIV01 (AUP)</li> <li>• Romania – Universitatea Din Oradea - RO ORADEA01 (UO)</li> </ul>
Language	English
Credits	2 ECTS equivalent
Level	BSc, MSc, PhD
Duration	8 weeks during summer semester
Placement	Warsaw University of Life Sciences, Poland (web – eSGGW/Moodle platform)
Involvement (hours)	80 h
Course capacity	Maximum 36 students
Course responsible	Dominika Średnicka-Tober (SGGW, Poland); Paola Migliorini (UNISG, Italy), Alexander Wezel (ISARA, France), Carola Strassner (FHM, Germany), Ivan Manolov (AUP, Plovdiv, Bulgaria), Adrian Timar (University of Oradea).
Other lecturers involved	Klaudia Kopczyńska & Rita Góralaska-Walczak (SGGW), Anamaria Supuran (University of Oradea), Rositsa Buluhova-Uzunova (Plovdiv), Aurélie Ferrer, Caroline Brand & Hélène Brives (ISARA)
Content	<p>The 8-weeks course is opened by a kick-off session organized with a presence of all lecturers &amp; students, and further organized in the following 5 sections (topics):</p> <p><b>Topic 1: General introduction</b></p> <ul style="list-style-type: none"> <li>• Introduction to the task (case study) (Charlotte Prelorntzos &amp; others)</li> </ul>

	<ul style="list-style-type: none"> <li>• Food system – components/structure/definitions (Carola Strassner)</li> <li>• Concept(s) and definitions/dimensions of embedded food systems (Caroline Brand)</li> <li>• How Food became a commodity (Nature Metropolis Book) (Hélène Brives)</li> </ul> <p><b>Topic 2: Products</b></p> <ul style="list-style-type: none"> <li>• Different types of production systems: conventional, organic, biodynamic (Ivan Manolov)</li> <li>• Agroecological practices (Aurelie Ferrer)</li> <li>• Processing (various aspects) (Adrian Timar)</li> <li>• Product: quality and safety specifications; quality and safety of organic, biodynamic food) (Dominika Średnicka-Tober)</li> </ul> <p><b>Topic 3: Food chain and stakeholders</b></p> <ul style="list-style-type: none"> <li>• Stakeholders/relational aspects in the food systems (Connections/links among different actors within the embedded food system) (Anamaria Supuran)</li> <li>• Distribution, retailing (Distribution in the Out-Of-Home channels (OOH wholesale and OOH – Horeca, institutional catering such as school meals etc.), Public Procurement &amp; food policy councils; distribution, sales channels including wholesale, retail, OOH, internet) (Carola Strassner)</li> <li>• Tool video on rich picture (Charlotte Prelorentzos; Anamaria Supuran)</li> </ul> <p><b>Topic 4: Consumption</b></p> <ul style="list-style-type: none"> <li>• Taste, consumers perceptions, food culture (incl. gender, religion, ethnicity, age, geography, globalisation, taboos, ... etc.) (Carola Strassner)</li> <li>• Nutrition, sustainable diet, health (Dominika Średnicka-Tober)</li> <li>• EU food policy &amp; policy on local, regional, traditional, quality products (Rosica Beluhova-Uzunova, AU)</li> <li>• Social justice &amp; food sovereignty (Paola Migliorini)</li> <li>• Food governance: how food has re-emerged on local authorities agendas (Caroline Brand)</li> </ul> <p><b>Topic 5: Relation to territories for a diverse and resilient food system</b></p> <ul style="list-style-type: none"> <li>• Diversity and resilience – what type of diversity and resilience exists in food systems (Paola Migliorini)</li> <li>• Spatial, social, economic, cultural, environmental aspects of food systems – a summary (Paola Migliorini)</li> </ul>
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<p>Learning outcomes / didactic goals of the course and each course section</p>	<p><b>Goals of the course:</b> to develop basic understanding on what is the embedded food system (EFS); to understand the multiple perspective of EFS; how to identify the EFS; learn through the case study (product) what are the conditions of how the product is embedded in the food system.</p> <p><b>Didactic goals of each section (topic):</b></p> <p>Topic 1: To become familiar with the e-learning structure, content, goal – introduction for the e-learning programme; getting general information/background knowledge about the embedded food systems.</p> <p>Topic 2: Common understanding of diverse production and processing management systems, food quality and safety standards and environmental footprint/impact of the production and processing systems in the context of EFS.</p> <p>Topic 3: Getting insight/understanding of the different elements of food system and the roles of the involved stakeholders; understand practices (public, private, community initiatives) that provide a direct consumer-producer link and valorizes the price for the producer as well as practices that allow the circulation of local products among the various actors of the local food system (collective catering, restaurants, craftsmen, transformation units, etc.); getting acquainted with environmental footprint/impact of the food chains.</p> <p>Topic 4: To understand the diverse elements at stakes in EFS for consumers; to understand that taste is influenced by situation + circumstances + ecological experience, that taste is the paradigm of embodied knowledge; to understand how consumer feel about the product, brand etc., the influence and role of brand and labels on consumers’ perception of the product; Understanding of the role of EFS for sustainable diets that integrate health and culture issues; Understanding of the term and importance of social justice in relation to EFS.</p> <p>Topic 5: To get acquainted with the food policy frameworks &amp; where to search for information on the local adaptation of the food policy. To reflect on/understand the roles/importance of embedded food systems for the overall food system sustainability (for diversity and resilience of the food system).</p>
<p>Literature</p>	<ol style="list-style-type: none"> <li>1. Aronson D (1996-8) Overview of Systems Thinking. (3 pp).</li> <li>2. Blay-Palmer A, Santini G, Dubbeling M, Renting H, Taguchi M, Giordano T. Validating the City Region Food System Approach: Enacting Inclusive, Transformational City Region Food Systems. Sustainability. 2018; 10(5):1680. <a href="https://doi.org/10.3390/su10051680">https://doi.org/10.3390/su10051680</a> (23 pp).</li> <li>3. FAO (2018) Sustainable Food Systems, Concept and Framework. CA2079EN/1/10.18 (8 pp).</li> <li>4. Sonnino, R. and Marsden, T.K., 2006, “Beyond the Divide: Rethinking Relations between Alternative and Conventional Food Networks in Europe”. Journal of Economic Geography 6: 181-199.DOI : 10.1093/jeg/lbi006</li> <li>5. Wezel, A., H. Brives, M. Casagrande, C. Clément, A. Dufour &amp; P. Vandembroucke (2016) Agroecology territories: places for sustainable agricultural and food systems and biodiversity conservation, Agroecology</li> </ol>

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17. Processing Technologies for Small-Scale Producers, Abebe Tessema and Markos Tibbo <https://afghanag.ucdavis.edu/livestock/files/camel-milk-processing.pdf>
18. Fruit and vegetable processing, Mircea Enachescu Dauthy <http://www.fao.org/3/v5030e/v5030e00.htm>
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Teaching and learning methods	<p>The course lasts 8 weeks. Every week there are activities related to the weekly category/topic (2-4 video lectures of 10-15 mins with quiz and reading materials, followed by a discussion in the discussion forum). The videos, quizzes and reading materials should help the students/support them/give them background to fulfil the weekly activity task for their case study product (in national/university/case study groups) and to discuss /answer the questions raised in discussion forums (learning group). Students should meet regularly in groups (case study groups, learning groups), following the proposed timetable, and submit submit a short meeting report after each meeting.</p> <p>Tasks for students:</p> <p>Taking quizzes after each lecture; getting acquainted with lectures and all reading materials provided by the lecturers, actively participating in the discussion forum as the result from learning groups work, preparing presentation in national group</p>

	<p>(group of students from the same university) by students on the selected case study.</p> <p>Students activity &amp; expected outcome of each e-learning week (on the case study product):</p> <ul style="list-style-type: none"> <li>• E-learning kick-off: Reflection on what students would like to learn in this course.</li> <li>• Week 1: Selection of a case study (product).</li> <li>• Week 2: What types of production and processing systems and quality and safety standards does your product come from? Characterize your case study (product, territory).</li> <li>• Week 3: Identify the actors of your case study (product), their roles &amp; links/connections/actions between them. Please include a rich picture/diagram to your report &amp; presentation that will illustrate the structure of your case study from a systemic perspective.</li> <li>• Week 4: Find out who eats the product (typically) and why (either market research data or ask a few users informally); Discuss the role for the product in diets; Discuss accessibility of the product for consumer (social/economic aspects), Identify how the consumer is taken into account in your case study.</li> <li>• Week 5: Figuring out the specific policies supporting or hindering your case study (product); Understanding food justice and food sovereignty in relation to the EFS.</li> <li>• Week 6: Try to develop a set of recommendations on how to improve the situation in the future? (as the very last point of the e-learning, to be included in the report &amp; presentation); Students should reflect on the roles/importance of embedded food systems for the overall food system sustainability. This general reflexion should also be applied for their respective case studies: from that perspective, what could be improved regarding their case studies?</li> </ul>												
Prerequisites	Degree in relevant field: BSc (2nd, 3rd or 4th year), MSc or PhD students in food science, agriculture, horticulture, agroecology, environmental sciences and related disciplines, interested in learning about embedded food systems and concepts, adequate fluency in English, availability for participation in the entire period of activities (e-learning and the following field trip – one week intensive study programme).												
Enrollment	Application form sent to the local coordinator at participating University												
Evaluation/grading	Presentation from the case study group work												
Workload (different categories)	<table> <tr> <td>Lectures</td> <td>10 h</td> </tr> <tr> <td>Reading</td> <td>20 h</td> </tr> <tr> <td>Case study presentation – own work</td> <td>40 h</td> </tr> <tr> <td>Quizzes:</td> <td>5 h</td> </tr> <tr> <td>Discussions:</td> <td>5 h</td> </tr> <tr> <td><b>Total</b></td> <td><b>80 h</b></td> </tr> </table>	Lectures	10 h	Reading	20 h	Case study presentation – own work	40 h	Quizzes:	5 h	Discussions:	5 h	<b>Total</b>	<b>80 h</b>
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Reading	20 h												
Case study presentation – own work	40 h												
Quizzes:	5 h												
Discussions:	5 h												
<b>Total</b>	<b>80 h</b>												

# Syllabi of all e-learning course lectures

## Food Systems – Connecting the dots (Carola Strassner)

### Title of the lecture

Food Systems – Connecting the dots

### Goal of the lecture

The goals of the lecture are to understand what a system approach is, what food systems comprise, and what the difference between a food system approach and a food chain approach is.

### Content

The lecture covers:

- Systems, what the system approach is rooted in, and the Systems approach in various fields of science
- Systems basics and Systems thinking
- Systems approach applied to the field of food
- Chains, supply chains, value chains and value systems in contrast with
- Food systems, definitions and understanding
- Scales in food systems
- Studying food systems

### Reading materials

- Aronson D (1996-8) Overview of Systems Thinking. (3 pp).
- Blay-Palmer A, Santini G, Dubbeling M, Renting H, Taguchi M, Giordano T. Validating the City Region Food System Approach: Enacting Inclusive, Transformational City Region Food Systems. Sustainability. 2018; 10(5):1680. <https://doi.org/10.3390/su10051680> (23 pp).
- FAO (2018) Sustainable Food Systems, Concept and Framework. CA2079EN/1/10.18 (8 pp).

### Quiz questions

Scientists and administrators agree that sustainable food production is about feeding the world's population rather than focusing on environmental and social issues.

- a. True
- b. False

Which of the following are typical elements of a food system?

- a. consumers
- b. farmers
- c. processors
- d. lawmakers

Which does not apply: The main purposes of Porter's Value Chain Model are to

- a. have a visual figure of a business's structure
- b. assess where in a business true value is created
- c. create or strengthen a business's competitive advantage
- d. improve communication between departments

Allocate the examples to a spatial scale: (lines are matching pairs; please mix)

Examples:	Spatial scales:
Rice / Meat commodity production	global
Multinational food corporation	global
Deep sea fisheries	global
Most supermarkets	regional
Most restaurant foods	regional
CSA (community supported agriculture)	local
foodhub	local
Home gardens	household
subsistence agriculture	household

Using a food systems approach and based on systems theories, we can study

- a. interdependencies
- b. feedback loops
- c. leverage points
- d. emergent behaviour
- e. adaptation

Which of the following are not examples of a system?

- a. heart, blood, and blood vessels for circulation
- b. a pile of sand
- c. a tree
- d. an airport

### **Questions for discussion forum**

- Can local food systems offer us all the foods we need?
- What are all the things you can think of that flow between any two elements of a food system (choose and name two elements)?
- What do you think might be suitable time frames to study food systems and why?

## Understanding the notion of EFS (Caroline Brand)

### Title of the lecture

Understanding the categories that set up the analysis of food systems and the specific contribution of the notion of EFS

### Goal of the lecture

The objective of this lecture is to give you some frameworks about the ways social sciences have invented categories to help our society in seizing the complex reality of the social world and accompany its political orientations.

1. We will review the different categories that are at the basis of the study of the food systems. The aim is to understand that food systems are structured through development models and that those models allow social sciences to characterize and distinguish diverse types of food systems. These categories are used to identify the nodes of tension and societal transformation.

2. From there, we will go through the specific notion of EFS so as to understand the specific contribution of this notion in the comprehension of the food systems, and in particular alternative and territorialized food systems. The objective will also be to identify some indicators that you could mobilize for the analysis of your case-study.

### Content

#### **1. How to seize food systems, their characteristics and their evolutions ?**

=> **3 main categories** exist to seize the evolutions and models that characterize our food systems

1.1 3 main categories

1.2 The conventional food system

1.3 The alternative food system

1.4 The hybrid/territorialized food system

#### **2. EFS notion : what inputs for food system analysis ?**

=> There are **many notions behind those 3 categories**, among which is the notion of EFS.

=> **EFS notion in the GOODFOOD programme is an invitation to study and challenge alternative/territorialized food systems** through the lens of economical, social and ecological stakes of food issues.

2.1 Use of the notion by food system researchers

2.2 Origin and critics of the notion : scope of the word « embedded »

2.3 Scope and indicators of EFS for the GOODFOOD programme

### Reading materials

- Sonnino, R. and Marsden, T.K., 2006, "Beyond the Divide: Rethinking Relations between Alternative and Conventional Food Networks in Europe". *Journal of Economic Geography* 6: 181-199. DOI : 10.1093/jeg/lbi006

- Wezel, A., H. Brives, M. Casagrande, C. Clément, A. Dufour & P. Vandenbroucke (2016) Agroecology territories: places for sustainable agricultural and food systems and biodiversity conservation, *Agroecology and Sustainable Food Systems*, 40:2, 132-144.

<https://doi.org/10.1080/21683565.2015.1115799>

Additional readings:

- J. Murdoch, T. Marsden, J. Banks, 2000, “Quality, Nature, And Embeddedness: Some Theoretical Considerations In The Context Of The Food Sector”, *Economics* DOI: 10.1111/j.1944-8287.2000.tb00136.x
- Sonnino, R. (2007). The power of place: embeddedness and local food systems in Italy and the UK. *Anthropology of Food*, (s2-Special issue on local food products and systems), 1–11. <https://doi.org/10.4000/aof.454> <https://journals.openedition.org/aof/454>

## Quiz questions

### 1. What are social sciences categories useful for ?

- Help understanding of the complex social reality
- Help economical stakeholders to define development strategies
- Inform and advise policies
- To focus on some dimensions of the social reality

### 2. What are the two main categories that set up the analysis of the food system ?

- Traditional food system and quality food system
- Regular food system and alternative food system
- Conventional food system and alternative food system

### 3. What is/are the common feature(s) of hybrid food systems ?

- They are more sustainable and inclusive
- They are territorialized
- They are complex

### 4. Who has fostered the notion of embeddedness ?

- Karl Polani, Mark Granovetter and Alain Caillé in the field of economic anthropology and economy
- Karl Polani, Mark Granovetter and Alain Caillé in the field of sociologic economy and economy
- Karl Polanyi, Mark Granovetter and Alain Caillé in the field of economic sociology and economy

### 5. What is interesting in the notion of embeddedness ?

- Understanding that one can not understand economical phenomenons without taking into account their specific relations to social phenomenons
- Understanding how food system relate to people, territory, policies and environment
- Analysing the relations between stakeholders of the food system

### 6. Why EFS notion could help challenging the actual failures of the alternative and territorialized food systems ?

- Because it proposes to relate ecological, social and economical stakes
- Because it proposes to center the view on economical stakeholders
- Because it could eventually tackle the actual lack of integration of agroecological, health and social justice issues

### **Questions for discussion forum**

- From your perspective, what is the usefulness of social sciences categories and notions regarding food systems evolution towards more sustainable and inclusive food systems ?
- What are indicators useful for ? What other indicators could you think of to push forward the reflexion and action for more sustainable and inclusive food systems ?

## From Food to Commodity – How food systems lose anchorage? (Helene Brives)

### Title of the lecture

From Food to Commodity – How food systems lose anchorage?

### Goal of the lecture

This lecture comes as a complement of previous lecture about EFS definition. Following William Cronon's amazing story of the growth of grain market in Chicago, we will see the invention of food as commodities during the second half of the 19th century. The goal is to take a step aside to deeper understand the notions of "embeddedness" and of food system "anchorage".

### Content

We will see how grain (corn and wheat) as "food from somewhere" and "food from somebody" has been transformed into commodity, that is to say how the grain food system lose its anchorage in the great western American plains through the development of Chicago market.

#### Story part 1

Before 1850's, grain market in Chicago and the great plains in a "food from somewhere regime".

#### Story part 2

Starting in the 1850's, with the development of the railroad, grain market is gradually moving into a "food from somewhere regime", transforming grain previously transported in marked sacks into a fluid commodity.

Grain elevators played a key role here, leading to the birth of Chicago Board of Trade and the invention of a standard grading system for grain.

Lessons from the story

EFS are systems where products keep traces of the history of their production (both ecological history and social history)

The importance of technical devices acting in the system => Food systems must be considered as socio-technical networks where human and non-human actors (artefacts and nature) play a role contributing to system locks-in anchoring system or losing anchorage defining the quality of the product

### Reading materials

Campbell, H. Breaking new ground in food regime theory: corporate environmentalism, ecological feedbacks and the 'food from somewhere' regime?. *Agriculture and Human Values* 26, 309 (2009). <https://doi.org/10.1007/s10460-009-9215-8>

Murdoch, J.; Marsden, T.; Banks, J., "Quality, Nature, And Embeddedness: Some Theoretical Considerations In The Context Of The Food Sector", *Economic Geography* 76 (2), 2000. <https://doi.org/10.1111/j.1944-8287.2000.tb00136.x>

Lecture based on the book: Cronon, W., *Nature's Metropolis. Chicago and the Great West*. New-York-Londres, W.W . Norton & Co., 1991, 530 p.



## Quiz questions

1. What are the main actors of the grain food system in Chicago before 1850's?

Waterways, sacks, ownership rights to grains

Rail roads, sacks, ownership rights to grains

Waterways, sacks, board of trade

2. Why is grain elevator a key actor of the transformation of the food system?

Because it allows to store huge quantities of grain

Because it uses a steam-powered conveyor belt (instead of human workers) to move grain into the building

Because it mixes grain from different origins in common bins

3. Grain becomes a commodity because of:

The end of sack-based shipment

The end of sack-based shipment and standard grading system

The end of sack-based shipment, standard grading system and futures markets

4. At the end of 19<sup>th</sup> century, the differentiated pricing system according to grain quality is based on:

Representative sample showed to buyers

A standard grading system

5. Food as commodities means low quality products

Yes

No

It depends on which quality we are talking about

## Questions for discussion forum

What are the opportunities and threats for the development of EFS related to digital technologies and uberization of food systems?

## Different types of production systems (Ivan Manolov)

### Title of the lecture

Different types of production systems: conventional, organic, biodynamic

### Goal of the lecture

The aim of the lecture is to acquaint students with the basic principles of different agricultural systems - conventional, biological and biodynamic.

### Content

Slide 2: Start with learning outcomes

- Agricultural systems
  - Conventional agriculture
  - Organic agriculture
  - Biodynamic agriculture
- Labels of organic and bio-dynamic products

Slide 3: Conventional agriculture

Conventional farming, also known as industrial agriculture, refers to farming systems which include the use of synthetic chemical fertilizers, pesticides, herbicides, genetically modified organisms (GMO).

Slide 4: Conventional agriculture

- concentrated Animal Feeding Operations,
- heavy irrigation,
- intensive tillage,
- concentrated monoculture production.
- Thus conventional agriculture is typically highly resource and energy intensive, but also highly productive.
- Conventional agricultural methods have only been in development since the late Nineteenth Century, and did not become widespread until after World War 2.

Slide 5: Definition of organic farming

- Organic farming is a production system which avoids or largely excludes the use of synthetically produced fertilizers, pesticides, growth regulators and livestock feed additives.
- The organic system rely on crop rotations, crop residues, animal manures, legumes, green manures, off-farm organic wastes, and aspects of biological pest control to maintain soil productivity and tilt, to supply plant nutrients and to control insects, weeds and other pests.

Slide 6: Main principles of organic farming – plant production

- The application of industrial fertilizers is forbidden!
- Maintaining of soil fertility is realized by:
- Application of:
  - manure,
  - composted plant residues
  - bio-fertilizer from vermicomposting

Slide 7: Main principles of organic farming – plant production

- application of diverse crop rotations,
- including growing of leguminous crops (N fixation) and natural and artificial meadows and pastures,
- cultivation of green manure crops.

Slide 8: Main principles of organic farming – plant production

- Pesticides for plant protection and growth regulators are forbidden.
  - Resistant varieties to diseases and pest are preferably grown.
  - Stimulation multiplying of beneficial organisms (entomofagous and super parasites).

Slide 9: Main principles of organic farming – plant production

Cultural, biological and physical methods for plant protection are used.

Like:

- color sticky traps
- and water traps

Slide 10: EU policy on local, regional, traditional, quality products – second part of the lecture

- Natural preparation as plant extracts, essential and plant oils are allowed for application,
- Some classical pesticides - sulfur and copper (restricted – up to 4 kg Cu/ha/year average for 7 years period),
- Pheromones and mating
- disruption method,
- Natural pest control,
- Intercropping.

Slide 11: Main principles of organic farming – Weeds

- direct destruction (hoeing crops by hand or mechanically)
- and thermal methods (flaming)

Heat injury involves denaturation of cellular proteins and the protoplasts rupture, which results in plant desiccation (45 – 50 °C).

Slide 12: Flame weeding – result

Slide 13: Main principles of organic farming – livestock production

- Livestock production is based on adapted to local conditions breeds.
- Methods similar to natural behavior of live for animals are applied.
- This methods decrease the stress and ensure good health state of animals.

Slide 14: Main principles of organic farming – livestock production

- Humane relation to livestock.
- Conditions for natural behavior of animals are ensured:
  - Free breeding,

- Enough area in the stables, cattle-sheds,
- Open air walking and grazing,
- Social contacts.
- Strict balance between breed animals and cultivated area.
- The animals are fed with on farm produced forages.
- Growth hormones are forbidden for use.
- Antibiotics are allowed at the last case – for saving an animal’s life.

Slide 15: Creation of biodynamic farming

- Rudolf Steiner formulated the theoretical principles of biodynamic agriculture during lectures held in 1924 in Germany.
- He reinvent for modern science old knowledge and practice, passed down through generations – which, in the case of agriculture, went back more than 7900 years.

Slide 16: Definition of biodynamic farming

- Biodynamics is a holistic, ecological, and ethical approach to farming, gardening, food, and nutrition.
- Biodynamic farm is a living organism.
- Biodynamic agriculture applies all the rules of organic farming!

Differences:

1. Farmers use calendar, according which activities in plant production with the impact of cosmic rhythms and particularly the moon are synchronized.
2. Biodynamic farming uses field sprays and compost preparations consisting of specific minerals or plants treated or fermented with animal organs, water and/or soil.

Slide 17: Biodynamic calendar of Maria Thun

Slide 18: Ascending and descending Moon

Slide 19: Main biodynamic preparations for direct application on soil and plants

- Preparation 500 represents fresh cow manure put in cow horn, stayed six months in the soil - from October to April.
- It provides strong energetic, which has a stimulating effect on soil microflora. It helps maintain good levels of bacteria and fungi. Sprayed over the soil surface.
- Preparation 501 - is a quartz flour /SiO<sub>2</sub>/ put in cow horn, stayed six months in the soil, from April to October, under the influence of Sun.
- It provides strong energy, which has a stimulating effect on the growth and maturation of plant tissues. Sprayed over the soil surface.

Slide 20: Compost preparations

- Compost preparations (numbers - 502, 503, 504, 505, 506 and 507) come from specially processed plants - yarrow, chamomile, nettle, oak bark, valerian, with animal products which were chosen by Rudolf Steiner due to their special properties to transfer specific forces of nature to the compost.
- The preparations are placed according specific scheme in the compost pile and they influenced the proper transformation of nutrients during the maturation of compost.

Slide 21: Advantages of organic and biodynamic farming

- Increasing biodiversity in and around the farms
- Improves soil structure and fertility
- Energy consumption is reduced by about 50%
- Soil erosion is reduced
- Soil flora, fauna and earthworms are protected
- Protection of groundwater and the environment from pollution by nitrates and pesticides
- Production of high quality healthy food

Slide 22: Logos on the labels of organic products

- European organic products
- USA organic products
- Australian organic products
- Biodynamic products

**Reading materials**

Vasileva, E.; Ivanova, D.; Tipova, N.; Stefanov S. Quality of organic foods – a model for comparative analysis, *Organic Agriculture*, 2019, 9 (1) 1 – 12. (<https://doi.org/10.1007/s13165-018-0211-4>)

Reganold, J.; Wachter, J. Organic agriculture in the twenty-first century, *Nature plants*, 2016, 2, 1-8. DOI:1038/NPLANTS.2015,221

**Quiz questions**

Quiz organic and biodynamic agriculture

1. What is the main goal of conventional agriculture?
  - 
  - 1) To keep the environment
  - 2) To improve the soil fertility
  - 3) To increase as much as possible the yields of growing crops\*
  - 4) To decrease the use of harmful substances in production
  -
2. What is forbidden to be used in organic agriculture?
  - 
  - 1) Mineral fertilizers, pesticides and growth regulators\*
  - 2) Organic fertilizers
  - 3) Tillage
  - 4) biological pest control
  -
3. Weed control may be carried out by:
  - a) weeds are not a problem in organic farming
  - b) only flame weeding
  - c) mechanical methods for controlling and flame weeding\*
  - e) herbicides

4. The main way of keeping animals in organic agriculture is:

- a) free breeding\*
- b) fixed (tied)
- c) in cellular batteries
- d) does not matter

5. What distinguish biodynamic agriculture from organic ones?

- 1) Using of divers crop rotations
- 2) Application of mineral fertilizers
- 3) Thinking mainly on the man's welfare
- 4) Coordination of agricultural practices with moon calendar and application of specific preparations for composting\*

### **Questions for discussion forum**

- Please, outline advantages and disadvantages of the three production systems presented in the lecture.
- Why organic and biodynamic farming systems have less impact on the environment?

## Agroecological practices (Aurelie Ferrer)

### Title of the lecture

Agroecological practices

### Goal of the lecture

The objective of this lecture is to present what one calls “agroecological practices”. What are these practices? To which extent are they similar or different from the regular “agricultural practices”? Some examples of agroecological practices are presented.

### Content

#### **1. The need for a transition towards more sustainable agricultural practices**

- Different solutions are proposed for the transition towards more resilient and more sustainable agricultural systems
- Agroecological practices: the definition

#### **2. Agroecological practices: a large set of practices**

- Characteristics of the “agroecological practices”
- Different degrees of complexity
- Different scales of application
- The biodiversity at the core of the majority of the agroecological practices

#### **3. Examples of agroecological practices**

- Agroecological practices used by European farmers
- Illustration of some of these practices

#### **4. Perspectives on agroecological practices implementation by farmers**

- Potential breaks and levers to adoption

### Reading materials

- Wezel A., Casagrande M., Celette F., Vian J.V., Ferrer A., Peigné A. 2014. Agroecological practices for sustainable agriculture. A review. *Agronomy for Sustainable Development* 34 (1): 1-20.

Additional readings:

- Wezel, A., Herren, B.G., Kerr, R.B. et al. Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review. *Agron. Sustain. Dev.* 40, 40 (2020).

### Quiz questions

Agroecological practices are agricultural practices aiming at:

- producing less to propose products of higher quality to the consumer
- valorizing as much as possible the ecological processes and the ecosystem services in the production
- valorizing the latest technological findings in agriculture for a more sustainable production

- Today, in Europe, there is no support through public policies for the implementation of agroecological practices:

- True
- Wrong

Cover crops are agroecological practices that:

- can help to control weeds
- are used only in organic agriculture to provide a fertilization to the following crop
- use always legume crops because of their nitrogen fixation ability
- can be used only in annual arable crop

The 4 principal categories of ecosystems services are:

- Provisioning, Recycling, Supporting, Cultural
- Provisioning, Regulating, Supporting, Cultural
- Provisioning, Recycling, Promoting, Cultural

All agroecological practices are based on the principle of diversification of the cropping or livestock farming system:

- True
- Wrong

### **Questions for discussion forum**

About the own experience of students:

- if they did an internship on a farm or visited a farm: which practices did they observe and how do they qualify them
- discussion about the possibility/potential of integration of some agroecological practices into the farming system (in the different countries of the students)...



## Processing of foodstuffs (Adrian Timar)

### Title of the lecture

Processing of foodstuff

### Goal of the lecture

The aim of the lecture is to provide students with the basic principles of different food stuff processing systems – related with different stage of the transforming the raw materials in foodstuff.

### Content

Slide 2: Start with learning outcomes

- Processing systems
  - Handling and transportation systems
  - Mechanical processing
  - Thermal processing
  - Biochemical and Biotechnological processing
  - Packing
  - Storage (Maturation)

Slide 3: Handling and transportation systems

Handling and transportation systems are the base of the good quality foodstuff. There are several mediums where the handling and transportation is needed.

Equipments used are very particular related with raw materials, foodstuff and also use of them.

Slide 4: Handling

- There are differences of handling due to the appearance and moment in the technological production flow.
- At the beginning of any technological production flow the raw materials are loaded in freighters and send to the processing plants. This is mainly made in bulk due to huge quantities.
- The main handling equipments of raw materials depending of their appearance are:
  - Loading equipment,
  - Unloading equipment,
  - Internal transportation equipment.

Slide 5: Loading equipments

Main loading equipments are:

- Forklifts,
- Pneumatic transportation systems,
- Conveyor belts,
- Aerial conveyors,
- Transport screw,

Slide 6: Unloading equipments

Unloading equipments are the same like the loading equipments.

There is a different approach for unloading of raw materials in bulk, using gravitational force for unloading by tipping is use in numerous cases.

Tipping can be applied also for transportation vehicle.

Slide 7: Internal transportation equipments

Internal transportation is done by a wide range of equipments. The most efficient internal transportation is represented by:

- Pneumatic transportation systems,
  - Conveyor belts,
  - Aerial conveyors,
  - Transport screw.
- There are in use also
- equipments with flow surfaces,
  - pumps,
  - elevators,
  - etc.

#### Slide 8: Mechanical processing

The aim of the mechanical processing is to reduce the size of raw materials up to optimum in order to ensure the best intake, packing, conservation, storage, absorption of nutrients, transportation, etc.

There are many types of mechanical processing operations and equipments. In this way the most common mechanical processing operations are the following:

- Polishing, (grains polishing machinery)
- Cutting, (knives, guillotines, etc)
- Grinding, (grinders, cutters, colloidal mill)
- Peeling, (grains peeling equipments, fruit and vegetable peeling equipments)
- Sorting, (sieves, vibrating tables, winnowers)
- Homogenization, (mixers, injectors)
- Emulsification, (colloidal mill, high speed mixers, )
- Shaping, (dough shapers, meat stuff shapers, extruders)
- Dividing, (dough divisors)
- Filling. (juice fillers, salami fillers, jam fillers)

#### Slide 9: Polishing

Polishing is the operation that detaches the external not valuable parts of raw materials. Most common equipments of this kind in use are the grains polishing machinery. The most common is rise polishing machinery.

#### Slide 10: Cutting

Cutting is done in different ways. Most of the time is a roughly reducing the size of raw materials.

It is done by knives, guillotines, etc. Applications are suitable for meat processing, fruit and vegetable processing, textured dairy products, etc.

#### Slide 11: Grinding

Grinding is the most common processing application in food industries. It is done by specific equipments like meat grinders, grains grinders, fruit and vegetable grinders, meat cutters, meat colloidal mill.

The aim of this process is reducing the size of particles from several centimeters up to micrometers in order to provide proper structure, texture, sticky, elasticity, etc

#### Slide 12: Peeling

Peeling is the process that allows the extraction of the external layers of the grains, fruits, vegetables in such a way that the valuable parts can be suitable for other processing operations.

The most common equipments used are: grains peeling equipments, fruit and vegetable peeling equipments, nuts peeling equipments.

#### Slide 13: Sorting

Sorting is done in order to select the particles of raw materials, fruits, vegetables, grains, etc with same properties and this will lead to optimal processing in next steps of technological flows.

This operation is done by sieves, vibrating tables, winnowers.

#### Slide 14: Homogenization

Consumers are buying products with superior properties and in this way one of the most important aspects is the homogeneity of the products. Homogeneity of raw materials and semi products is also a key to optimal run of the production flows.

Most of the time this operation is done by mixers, injectors, etc.

#### Slide 15: Emulsification

The structure and texture of the foodstuff novo days, due to economical issues is unfortunately related more and more to this operation. During this stage rheological, sensorial and technological properties of the products are improved despite of using of water, surrogates, etc.

The emulsification is done using colloidal mill, high speed mixers, etc.

#### Slide 16: Shaping

Shaping is done for providing to the foodstuff the appearance that lead to the buying decision. Shaping can be done in most of the food industries sectors. Most common are in bakery, meatstuff, diary sector.

Equipments used are dough shapers, meat stuff shaper, cheese shapers, extruders, etc.

#### Slide 17: Dividing

Dividing of raw materials or semi products or even of finished products is important to keep the homogeneity that provide high quality, high yield and reduce the withdrawing. Applications are common in bakery, diary, meat, fruit and vegetable sectors.

It is done by divisors, dough divisors, special forms, etc.

#### Slide 18: Filling

Filling is most of the time at the end of the processing flow. It provides food safety and fair trade for consumers. In this way there is a wide range of applications from fruit and vegetable processing to meat and bakery sectors.

Trough juice fillers, salami fillers, jam fillers, yogurt and milk fillers etc.

#### Slide 19: Thermal processing

Thermal processing has two directions. Positive temperature over 4°C and low temperature under 4°C thermal treatments.

In this way we have low temperatures technologies:

- Refrigeration, 0 – 4 °C
- Freezing, - 18 °C
- Ultra freezing, -70 °C
- Lyophilisation, -40 °C and 500µbar pressure

In the other branch of thermal treatments there are:

- Defrosting,
- Cooking,
- Blanching,
- Smoking,
- Pasteurisation and Sterilisation,
- Concentration,
- Drying,

#### Slide 20: Refrigeration, Freezing, Ultra freezing and Lyophilisation

The low temperature provides food safety by blocking or even destroys micro flora multiplication; allow keeping the nutrients at the high values, ensure household storage, keep running the foodstuff supply chains, etc.

The applications are in whole sectors and start to become a new challenge in order to conduct all processes at lower temperature than degradation temperature of nutrients, vitamins, enzymes, etc.

- Refrigeration, 0 – 4 °C
- Freezing, - 18 °C
- Ultra freezing, -70 °C
- Lyophilisation, -40 °C and 500μbar pressure

Equipments used in this processes are the following: Refrigerators, Freezers, Ultrafreezers, Lyophilisators.

A particular aspect is related with cooling equipments that are used for providing microclimate in processing areas where is necessary.

#### Slide 21: Positive temperature thermal treatments I

Defrosting done by different methods (radiant surfaces, warm or hot air, warm water, micro way, high frequency current, etc) restore the original status of freezed raw materials, semiproducts or foodstuff when is require.

Blanching, give the opportunity to provide an window of opportunity that block the microflora activity, stabilised the colour, improve the texture and structure and in this way will enhance processing in next technological steps from the production flow. The temperature usually used is 100 °C for short time and is followed by a quick cooling.

#### Slide 22: Positive temperature thermal treatments II

Pasteurisation and Sterilisation was one of the first methods of prolonging the shelf life of the foodstuff. The process destroy microflora involved in alteration of foodstuff. Applications are very various from diary sector, meatstuff, brewing, fruit processing, etc.

Pasteurisations destroy the vegetative forms of the microorganisms. Sterilisation destroy all the microorganisms.

There are various type of pasteurisation according to product specifications. Pasteurisation can be done to the product in Heat exchangers.

#### Slide 23: Positive temperature thermal treatments III

Concentration is the operation that allow the storage, handling, transportation and dassing optimal the semiproducts or finished products. It is done in liquid form. Most of the time is done by evaporation under temperature that ensure a vapour pressure above the surface of the fluid lower than the vapour concentration in the fluid.

Latest technologies use vacuum in order to decrease the evaporation temperature. Unfortunately this is leading to high losses of volatile compounds that are responsible for taste and smell of the products.

The equipment most common are concentrators and vacuum concentrators. Applications are in most of the sector of food industries focused on fruit and vegetable processing, dairy products, food supplements and sugar industry.

Drying, reduce the microorganisms pressure on the foodstuff due to very low water content. It also allows excellent storage, handling, packing and transportation of foodstuff.

The most common drying systems are use in storage and milling of grains and in meat industry.

Dryers have various construction solutions according with the type of foodstuff. Most of them use hot air, radiant surfaces, fluid bed, infrared emission, microways or combined of mentioned techniques.

Unfortunately concentration and drying affect the bioactive, nutrients and enzymes from foodstuff due to high temperature.

#### Slide 24: Positive temperature thermal treatments IV

Cooking, provide superior sensorial properties and is suitable for most of the food sector branches. The cookers used are according with products classification and are working in discontinuous or continuous way with manual or automatic loaders and unloaders. There are used additional substances like oils, animal fats, vegetables or spices.

Smoking, ensure a specific taste and smell of the foodstuff. Also due to compounds from smoke foodstuff shelf life is largely extended. Smoke is an aerosol that contain gases, water and solid particles. The smokers are classical; production of smoke is done by burning various kind of wood (pyrolysis), by friction, etc.

#### Slide 25: Biochemical and Biotechnological processing

Biochemical processing uses many substances that are improving other processing operations and quality of foodstuff as well. This lead to stabile, long shelf life and high nutritional properties for foodstuff.

Most common techniques are the following:

- Acidification,
- Coagulation,
- Emulsification,
- Antioxidant treatments,
- Stabilization,
- Coloring,
- Curryng,
- Conservation,
- etc.

Substances used are from natural sources or produced by chemical synthesis. In last year's natural similar substances are slowly banned.

Biotechnological processing are based on biochemical processes but the sources of involved compounds are strains of selected microorganisms. The most common substances that are involved are enzymes and the secondary metabolic compounds produced by microorganism.

Fermentations, Maturation, Aging of drinks, etc.

Processes are done in recipients, bioreactors and specific rooms.

Application of Biochemical and Biotechnological processing are very wide. All sectors from food industries are beneficiary.

#### Slide 22: Packing

Packing unfortunately raises the pollution at highest level from humankind history. Due to this I am mentioned just fully recyclable and reuse packages with lowest CO<sub>2</sub> emissions.

Packages are used for technologically purposes and distribution. Technological packages are very different. Most famous are the wood barrels for vine maturation.

The distribution packages are designed for solid, liquid and granular products.

Main packages used are: bottles, jars, barrels, cellulosic bottles and jars, packing films made from celluloses, biodegradable films based on starch, paper or other natural compounds, packing papers, cans, collagen membranes, cellulosic membranes, wood boxes, paper bags, biodegradable bags based on starch, etc.

Main issue of packaging is related with plastic microfibers and in my opinion with nanoparticles detached from microfibers – the oligomers.

#### Slide 22: Storage (Maturation)

Storage is done in a various ways according with the product specifications. The storage of raw materials is a real challenge due to huge quantities and long term. Storage of finished foodstuff is a challenge also because of shelf life and related issues that occurs from this.

In this way the storage infrastructure consist in:

- Platforms,
- Sheds,
- Warehouses,
- Silos,
- Cellars,
- Other special places.

The aim of the storage is to provide specific conditions during shelf life of the products but also improving the quality of them trough maturation process. Main issues are related with temperature, water activity, atmosphere content and microflora actions. This aspects lead in last decades to the generalisation of controlled environmental storage stems.

Despite of this there are also in use special storage places for special products that include traditional cellars, caves or former salt mines for maturation and storage of meatstuff or dairy products.

### Reading materials

1. Meat processing technology for small- to medium- scale producers, Gunter Heinz, Peter Hautzinger  
<http://www.fao.org/3/ai407e/ai407e.pdf>
2. Processing Technologies for Small-Scale Producers, Abebe Tessema and Markos Tibbo  
<https://afghanag.ucdavis.edu/livestock/files/camel-milk-processing.pdf>
3. Fruit and vegetable processing, Mircea Enachescu Dauthy  
<http://www.fao.org/3/v5030e/v5030e00.htm>
4. Post harvest operations  
[http://www.fao.org/in-action/inpho/resources/toolkit/en/?page=2&ipp=5&tx\\_dynalist\\_pi1%5Bpar%5D=YToxOntzOjE6IkwiO3M6MToiMCI7fQ%3D%3D](http://www.fao.org/in-action/inpho/resources/toolkit/en/?page=2&ipp=5&tx_dynalist_pi1%5Bpar%5D=YToxOntzOjE6IkwiO3M6MToiMCI7fQ%3D%3D)

### Quiz questions

Quiz processing of foodstuff

A. Handling and transportation systems

What are the common systems use in loading/unloading and internal transportation systems?

- Pneumatic transportation systems,\*
- Conveyor belts,\*
- Trucks,
- Aerial conveyors,\*
- Transport screw.\*

B. Mechanical processing

- Mark mechanical processing operations from the answer list.

1. Polishing, \*
2. Acidification,
3. Cutting, \*
4. Grinding, \*
5. Peeling ,\*
6. Refrigeration,
7. Homogenization,\*
8. Shaping, \*
9. Maturation,
10. Filling.\*

### C. Thermal treatments I

What are the low temperature treatments?

- Pasteurisation and Sterilisation,
- Concentration,
- Refrigeration, \*
- Freezing, \*
- Ultra freezing, \*
- Blanching,
- Smoking.

### D. Thermal treatments I

Mark the correct temperature for low temperature processes.

- Refrigeration, 0 – 4 °C\*
- Freezing, - 10 °C
- Refrigeration, 0 – 5 °C
- Ultra freezing, -70 °C\*
- Ultra freezing, -28 °C
- Lyophilisation, -10 °C and 500μbar pressure
- Freezing, - 18 °C\*
- Lyophilisation, -20 °C and 500μbar pressure

### E. Biochemical and Biotechnological processing

Mark the Biochemical treatments that are used in food processing.

- Acidification, \*
- Shaping,
- Milling,
- Antioxidant treatments, \*
- Stabilization, \*
- Pasteurisation.

### Questions for discussion forum

- Outline advantages of synergic action of processing methods presented.
- Why processing of foodstuff through advanced methods is important for embedded food systems?

## Organic food quality and safety (Dominika Średnicka-Tober)

### Title of the lecture

Organic food quality and safety.

### Goal of the lecture

The aim of the lecture is to provide knowledge concerning the impact of the agricultural environment and the organic production method on the quality and safety of plant and animal origin organic foods which contribute to healthy life for present and future generations.

### Content

1. Factors affecting the quality of food
2. What is organic food
3. Why do consumers choose organic food
4. Quality and safety of organic food
  - Storability
  - Sensory quality
  - Nutritional value
  - Pesticide residues
  - Potential impact on human health

### Reading materials

Średnicka-Tober, D.; Kazimierczak, R.; Rembiałkowska, E. Organic food and human health – a review. *Journal of Research and Applications in Agricultural Engineering*, **2015**, 60(4), 102–107.

Gomiero, T. Food quality assessment in organic vs. conventional agricultural produce: Findings and issues. *Applied Soil Ecology* **2018**, 123 714-728. [10.1016/j.apsoil.2017.10.014](https://doi.org/10.1016/j.apsoil.2017.10.014)

### Quiz questions

Please provide 5-10 multiple choice questions (3-4 choices, one answer correct) for a quiz for each video lecture.

1. In comparison with meat of conventionally reared animals, the organic meat is usually characterised by:
  - a) higher content of polyunsaturated fatty acids, especially in lamb
  - b) the same content of monounsaturated fatty acids in poultry
  - c) lower content of saturated fatty acids, especially in beef
  - d) higher content of polyunsaturated fatty acids, especially in poultry
2. Differences in composition between organic and conventional milk are caused mainly by:
  - a) different methods of cow milking in both systems
  - b) age of animals usually different in both systems
  - c) cows feeding regimes, especially grazing and fresh feeds in the organic system
  - d) genetic factors
3. Which compounds occurred in highest quantities in organic plant crops in comparison to conventional ones have the most antioxidant properties?
  - a) polyunsaturated fatty acids
  - b) carotenoids
  - c) polyphenols



- d) vitamin B
4. Which heavy metal occurred in conventional crops in highest quantities sourced in conventional agriculture from phosphorus fertilisers?
- a) Cadmium
  - b) Chromium
  - c) Arsenic
  - d) Mercury
5. What is the frequency of occurrence of pesticide residues in conventional crops (on average)?
- a) ~15%
  - b) <15%
  - c) ~45%
  - d) >55%
6. organic food consumption may:
- a) reduce exposure to pesticides
  - b) reduce intake of plant secondary metabolites
  - c) reduce immune system responsiveness
  - d) reduce a risk of some cancers, preeclampsia, hypospadias

### **Questions for discussion forum**

- What are the opportunities and threats for the further development of organic food production sector in the EU?
- What are the main motivations for consumers to buy organic food?

## Stakeholders - relational aspects within the food systems (Anamaria Supuran)

### Title of the lecture

Stakeholders - relational aspects within the food systems

### Goal of the lecture

The lecture has in view:

- To identify the important stakeholders within the food systems (primary and secondary stakeholders);
- To present relational aspects among various stakeholders within the local food systems;
- To identify the supporting and non-supporting relations among stakeholders.

### Content

1. Food systems. Local food systems
2. Definition of a stakeholder
3. Types of stakeholders (primary and secondary stakeholders)
4. Stakeholders within food systems
5. Relational aspects among stakeholders within the food system. Supportive and Non-supportive relations among stakeholders
  - Supportive relations: (Producer-Consumer; Producer-Producers' associations/professional associations, Producers and Cooperatives, Producers and Hotels/Restaurants/Catering, Producers and Governments/ Administration, Producers and civil society actors, Producers and Education/Research
  - Non-supportive relations

### Reading materials

- Roberta Sonnino, The power of place: embeddedness and local food systems in Italy and the UK, From local food to localised food, 2007, Special issue on local food products and systems, <https://doi.org/10.4000/aof.454> <https://journals.openedition.org/aof/454>
- EU Rural Review, Chapter Building Partnerships and Strategies, A publication from the European Network for Rural Development, Local Food and Short Supply Chains, 2012, No. 12, page 40-55, <https://enrd.ec.europa.eu/sites/default/files/E8F24E08-0A45-F272-33FB-A6309E3AD601.pdf>

### Quiz questions

1. Which of the following can be considered primary stakeholders?
  - a. Farmers and their agents
  - b. Agricultural suppliers and services
  - c. Food distributors and processors
  - d. Food and agriculture agency representatives
  - e. Food retailers
  - f. Small business support and local lending institutions
  - g. Interested community members

- h. Competitors
- 2. **Are educational institutions considered as secondary stakeholders?**
  - a. Yes
  - b. No
- 3. **Is the analysis of stakeholders necessary in order to establish their level of engagement?**
  - a. Yes
  - b. No
  - c. Sometimes
- 4. **Which of the following relationships among stakeholders could be unsupportive:**
  - a. Relations between producer- local community
  - b. Relations between producer - food processors
  - c. Relations between producer - competing farms
  - d. Relations between producer - cooperatives
  - e. Relations between producer - NGOs
- 5. **Is mass media supporting the stakeholders in the food systems?**
  - a. Yes, it always supports all the stakeholders
  - b. No, it is always non-supportive
  - c. Depends on the situation.

#### **Questions for discussion forum**

1. Which stakeholders benefit from the embedded food system?
2. Which stakeholders can be important changers or resisters within the embedded food systems?

## Food Distribution from Wholesale to Retail and Horeca (Carola Strassner)

### Title of the lecture

Food Distribution from Wholesale to Retail and Horeca

### Goal of the lecture

The goals of the lecture are to understand the basics of food distribution, explain the power relations between major actors, and analyse selected cases of food distribution.

### Content

The lecture covers:

- Food distribution in food systems
- The sales channel perspective
- Wholesale and B2B distribution
- B2C distribution in retail and horeca
- E-Commerce – Getting virtual products to real consumers
- Power relationships and drivers
- Dominant and alternative distribution approaches in food systems
- Mini case study

### Reading materials

Augere-Granier M-L (2016) EPRS Short food supply chains and local food systems in the EU. Briefing September 2016 European Parliament. EPRS – European Parliamentary Research Service. Member's Research Service. PE 586.650, 10 pp.

Feenstra G (1997) Local food systems and sustainable communities. American Journal of Alternative Agriculture, 12(01):28-36 doi:10.1017/S0889189300007165

eip-agri (2019) Innovation in short food supply chains: creating value together. EIP-AGRI Service Point publication. Brochure. February 2019, 8 pp.

### Quiz questions

Which of the following can be distribution channels? [Answer: All of them)]

Wholesalers

Retailers

Internet

Farmers

Commercial agents

The dominant distribution channel for many countries in Europe such as Germany is

Corner shop

Farmer's market

Supermarket

Farmer's shop

The supply chain is

Upstream

downstream

The distribution chain is

Upstream

Downstream

The mini case study Teikei is which of the following SCFS forms?

Direct sales by individuals

Collective direct sales

Partnerships

At EU level, direct sales between farmers and consumers represent which proportion of the fresh food market?

2%

5%

14%

32%

### **Questions for discussion forum**

Please provide 1-2 questions related to the topic of your lecture to be shared & discussed with e-learning participants in the discussion forum.

Which do you think are particularly good food distribution systems and why? Do you think food distribution should change and in what way? Would you differentiate for food groups?

Think of some of the foods you consume. For which of these do you know any of the people in the channels? Which ones? Would you like to know them? Do you think it's important?

Think of a food product you would like to produce or develop. Who would be your target consumers and how would you like to organise the distribution chain? Why?

## Tool video on Rich Pictures (Charlotte Prelorentzos & Anamaria Supuran)

### Title of the lecture

Tool video on Rich Pictures.

### Goal of the lecture

Introducing the Rich Picture tool and instructions for the related student task of week 3:

Identify the actors of your case study (product), their roles & links/connections/actions between them and create a Rich Picture.

### Content

1. Brief history of visual communication
2. What is a Rich Picture?
3. Characteristics of a Rich Picture
4. Elements of a Rich Picture
5. Why develop a Rich Picture?
6. How to do it? General guidelines
7. The GOODFOOD O2 > week 3 task instructions

### Reading materials

1. Tessa Berg, 2012, "Rich Pictures: A valuable means to explore complex issues", Conference: UKAIS, Oxford, UK, AIS electronic Library  
[www.researchgate.net/publication/272019864\\_Rich\\_Pictures\\_A\\_valuable\\_means\\_to\\_explore\\_complex\\_issues](http://www.researchgate.net/publication/272019864_Rich_Pictures_A_valuable_means_to_explore_complex_issues)
2. S. Bell, S. Morse, 2013, "How people use Rich Pictures to help them think and act", Systemic Practice and Action Research 26(4)  
DOI:10.1007/s11213-012-9236-x  
[www.researchgate.net/publication/257664900\\_How\\_People\\_Use\\_Rich\\_Pictures\\_to\\_Help\\_Them\\_Think\\_and\\_Act](http://www.researchgate.net/publication/257664900_How_People_Use_Rich_Pictures_to_Help_Them_Think_and_Act)

### Quiz questions

Not needed

### Questions for discussion forum

- > Any new insights about this complex situation- and how to handle it?
- > What are the 5 main challenges of your case study arising from your Rich Picture about the food chain and related connections and actors - and how to handle it?

## Food Consumption – The Taste of Local (Carola Strassner)

### Title of the lecture

Food Consumption – The Taste of Local

### Goal of the lecture

The goals of this lecture are to understand the many factors affecting consumer perceptions of food and those influencing food preferences, to explain Maslow's Hierarchy of Needs model and apply it to food-related behaviour, to explain the iceberg model of culture, apply gender division of labour to own observations, and to provide material for students to analyse and evaluate their chosen Case Study food product.

### Content

Please provide a short characterization of the lecture content – in bullet points. Remember that the lecture should be 10-15 minutes long.

The lecture covers

consumers and eaters

- consumer perceptions
- food culture (influences including gender, religion, ethnicity, age, geography, globalisation, taboos, etc.)
- cooks and craft industries
- taste and traditions
- local foods

### Reading materials

Damsbo-Svendsen M, Menadeva Karpantschhof BE & Bom Frøst M (2020) Teaching sensory science to practitioners can change what we eat. *International Journal of Food Design*, 5:1&2, pp. 103–112, doi: [https://doi.org/10.1386/ijfd\\_00013\\_3](https://doi.org/10.1386/ijfd_00013_3)

JRC (2013) Consumer attitudes to LFS / SFSCs. Ch. 3.5, pp 35-37, In: *Short Food Supply Chains and Local Food Systems in the EU. A State of Play of their Socio-Economic Characteristics*. Report EUR 25911 EN, Luxembourg: Publications Office of the European Union, ISSN 1831-9424 (online) doi:10.2791/88784

### Quiz questions

Correct answers are green

Which of the two was the first attempt to explain human conduct?

- Behavioural economics
- Rational choice theory

Which is or are the common CSFs between Klosse's Dutch and Kawasaki's Japanese sets?

- Name
- Smell

- Main ingredient
- Good balance
- Surprise
- Not too rich
- Umami presence

Food preferences are only innate. True or False?

- True
- False

The iceberg model of culture tells us that there are far more aspects of relevance below the waterline, unseen, than above. True or false?

- True
- False

The four categories for the gender division of labour are:

- Reproductive role
- Community management and political activities
- Household and community services
- Productive role
- Trade role

Eating has a variety of functions for humans; these include:

- physiological
- anthropological
- social
- psychological
- geographical

### **Questions for discussion forum**

- What are your own personal Culinary Success Factors, at home, and, also out at a dining place?
- What attributes are important to you and high on your list describing food quality?
- How would these stay the same or be different for local food?



## EU Food policy (Rositsa Beluhova-Uzunova)

### Title of the lecture

EU FOOD POLICY & POLICY ON LOCAL, REGIONAL, TRADITIONAL, QUALITY PRODUCTS

### Goal of the lecture

To get acquainted with the food policy frameworks and the EU policy on local and traditional products.

### Content

Slide 1: Start with learning outcomes

- Define food policy and related terms
- Global and EU policies that influence food system – different dimensions and aspects
- EU Common Food Policy- expectations
- EU policy on local, regional, traditional, quality products

Slide 2: Definitions

- Present 2 basic definitions and distinguish food policy and food security

Slide 3: Food policy - Global level

- Present the global agreements
- Agreement on Agriculture and the Agreement on the Application of Sanitary and Phytosanitary Measures, both of which came into force in 1995.
- United Nations Framework Convention on Climate Change (UNFCCC), most recently amended under the 2015 Paris Agreement.
- Right to food, part of the 1966 International Covenant on Economic, Social and Cultural Rights (ICESCR).
- 1982 UN Convention on the Law of the Sea and Law of the Sea Convention, as well as other global instruments pertaining to fisheries
- Apart from these formal agreements, there is a broad range of 'soft' forms of policy set at global level - SDGs, agreed upon in 2015.

Slide 4: EU level

- Outline that The EU currently does not possess a framework for integrated Food policy.
- Instead, EU food governance is characterised by a fragmented landscape of policies that, either intentionally or non-intentionally, affect the functioning of the EU food system.
- The new 'Farm to fork' strategy indicates a push towards strengthened policy integration.
- Slide5: Present different dimensions that are affecting food policy

Slide 4: The Common Agricultural Policy (CAP) has been a central pillar of the European integration project since its beginning- 2 Pillars and 26% of the EU budget

Slide 6: Food safety

- The EU has developed a food safety governance architecture as part of the General Food Law.
- Apart from food safety in a narrow sense, the EU has also developed legislative frameworks on plant and animal health, and on food information to consumers.

Slide 7: While the EU has strong legislative competences for some areas of human health, the functioning of national health systems and services remains largely within the realm of member states.

- 2007 Strategy on nutrition, overweight, and obesity-related health issues.
- The EU action plan on childhood obesity followed in 2014.

Slide 8: Energy policy- - Energy policy has become an increasingly important domain for governing food systems. Due to the food system's heavy reliance on fossil fuels, transition of the food system is intrinsically linked with transforming the energy system

The EU aims to be climate-neutral by 2050 – an economy with net-zero greenhouse gas emissions.

Slide 9:

- EU environmental policy has traditionally given much attention to regulating the externalities of food production, e.g. through the nitrate and water framework directives.
- The 2011 Biodiversity Strategy
- In addition, water scarcity (droughts) and the availability of quality drinking water are priorities in the EU policy

Slide 10:

- There is a vision for reforming European food systems under the umbrella of a Common Food Policy - a policy setting a direction of travel for the whole food system, bringing together the various sectorial policies that affect food production, processing, distribution, and consumption, and refocusing all actions on the transition to sustainability.

Slide 11: EU policy on local, regional, traditional, quality products – second part of the lecture

- EU quality policy aims at protecting the names of specific products to promote their unique characteristics, linked to their geographical origin as well as traditional know-how.
- The GI recognition enables consumers to trust and distinguish quality products while also helping producers to market their products better.

Slide 12:

Geographical indications comprise of:

- PDO – Protected Designation of Origin (food and wine)
- PGI – Protected Geographical Indication (food and wine)
- GI – Geographical Indication (spirit drinks and aromatised wines).

Slide 13: Protected designation of origin (PDO)

- Outline the main features of PDO

Slide 14 and Slide 15: Protected designation of origin (PDO)- examples – Bulgarian rose oil, Kalamata olive oil

Slide 16: Protected geographical indication (PGI)- main features

Slide 17: Gorgonzola cheese and Manna honey- examples for PGI

Slide 18 and Slide 19: Geographical indication of spirit drinks and aromatised wines (GI)- main features and example(Irish whiskey)

Slide 20-21: Traditional speciality guaranteed- main features – examples- Gueuze and Fillet Elena

Slide 22 and 23: Explaining the difference between PDO, PGI, TDG – some data for registered PDO, PGI

Slide 24: Benefits and advantages

Slide 25: Mountain product- features and examples- Origine Montagne” (mountain origin)

Slide 26: Product of EU's outermost regions- features

Slide 27: Organic logo- something different than GI

Slide 28: Thank you for your attention

### **Reading materials**

1. IPES-Food panel, 2019, Towards a Common Food Policy for the European Union - the policy reform and realignment that is required to build sustainable food systems in Europe- Executive summary, Available at: [http://www.ipes-food.org/\\_img/upload/files/CFP\\_ExecSummary\\_EN.pdf](http://www.ipes-food.org/_img/upload/files/CFP_ExecSummary_EN.pdf)

2. Hajdukiewicz,A., 2014, European Union agri-food quality schemes for the protection and promotion of geographical indications and traditional specialities: an economic perspective, Folia Hort. 26/1 (2014): 3-17. <https://doi.org/10.2478/fhort-2014-0001>

### **Addition literature:**

1. Green European Journal, 2017, A food policy for Europe, Full text available at: <https://www.greeneuropeanjournal.eu/a-food-policy-for-europe/>
2. European Commission, 2021, Evaluation support study on geographical indications and traditional specialities guaranteed protected in the EU, Executive summary, Available at : <https://op.europa.eu/en/publication-detail/-/publication/a992f57c-7b07-11eb-9ac9-01aa75ed71a1/language-en>

### **Quiz questions**

#### **1. Which is the main characteristic of protected designation of origin (PDO)?**

- a) At least one of the stages of production, processing or preparation takes place in the region.
- b) Every part of the production, processing and preparation process must take place in the specific region.
- c) Highlights the traditional aspects such as the way the product is made or its composition, without being linked to a specific geographical area.
- d) Highlights the specificities of a product, made in mountain areas, with difficult natural conditions.

#### **2. Which country has the highest number of registered products under the EU quality schemes?**

- a) Italy
- b) Spain
- c) Greece
- d) Sweden

#### **3. Which of the following products is example of Traditional speciality guaranteed?**

- a) Irish Whiskey
- b) Gorgonzola cheese
- c) Kalamata olive oil
- d) File Elena

**4. Which of the following logos is related to Protected geographical indication?**



a) \_\_\_\_\_



b)



c)



d)

**5. Food policy is:**

a) Area of public policy concerning how food is produced, processed, distributed, and purchased.

b) When all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life

c) Related to handling, preparing and storing food in a way to best reduce the risk of individuals becoming sick from foodborne illnesses.

d) The right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems

**Questions for discussion forum**

What is the link between GI and Rural development?

## Social justice & food sovereignty (Paola Migliorini)

### Title of the lecture

Social justice & food sovereignty

### Goal of the lecture

The objective of this lecture is to give you insights on how food standards and regulation have dealt with social justice and food sovereignty. To get acquainted with the food policy frameworks & where to search for information on the local adaptation of the food policy.

### Content

#### **1. Linkages between agroecology and food sovereignty**

Food Sovereignty definition, origins and brief history of food sovereignty as an alternative paradigm to industrial food and farming. The importance of local organisations and social networks for transformation to food. Examples of food system transformation at different scales and in their policy and institutional contexts.

#### **2. Linkages between organic farming and social justice**

Examples of organic agriculture certification and other food standards and their implication for social justice.

### Reading materials

Anderson, C.R., Bruil, J., Chappell, M.J., Kiss, C., and Pimbert, M.P. (2019). "From Transition to Domains of Transformation: Getting to Sustainable and Just Food Systems through Agroecology." Sustainability 11(19), 5272 doi: 10.3390/su11195272

Shreck A, Getz C, Feenstra G. Social sustainability, farm labor, and organic agriculture: Findings from an exploratory analysis. Agriculture & Human Values. 2006;23(4):439-449. doi:10.1007/s10460-006-9016-2

### Quiz questions

#### **1. What is food sovereignty?**

- is ensuring that all people at all times have both physical and economic access to the basic food that they need
- is a food system in which the people who produce, distribute, and consume food also control the mechanisms and policies of food production and distribution"
- is about handling, storing and preparing food to prevent infection and help to make sure that our food keeps enough nutrients for us to have a healthy diet.

#### **2. When food sovereignty was first officially presented?**

- in 1996 during the World Food Summit in Rome
- in 2007 T Nyéléni Forum on Food Sovereignty (Mali)
- in 2018 at FAO symposium in Roma

#### **3. Food Sovereignty puts emphasis on how food produced, by whom, where, and with what impacts on society & environment**

True/false

**4. Organic agriculture certification include direct social standard issues**

True/false

**5. The right to access to land is a key element of food sovereignty**

True/false

**Questions for discussion forum**

- Food sovereignty is a pre-condition to genuine food security. Do you agree?
- Discuss the relation between Food sovereignty and Agroecology
- Discuss the relation between peasant farming, Food sovereignty and social justice
- Discuss the relation between organic farming and social justice

## Food governance (Caroline Brand)

### Title of the lecture

Food governance: How food has re-emerged on the agendas of local authorities?

### Goal of the lecture

The objective of this lecture is to give you insights on how local governments have dealt with the food issue in the past and more recently and to understand how we can engage in more sustainable food systems in an urban era.

1. We will go back in the past to see the way food has been regulated and the successive roles of local governments in that.
2. Then, more recently, we will see how food is re-emerging on the agendas and the ways a food governance is being structured.

### Content

#### **1. From a disengaged and sectoral approach ...**

##### 1.1 When food used to be strategical

Until the end of the 19th century, **local public authorities intervened** in the food system of their territory.

##### 1.2 A sectorial management at the time of disconnected relations

But progressively, they **moved away from a strategic apprehension** of the food system. It **has been replaced by a sectoral approach on sectors of activity**. **And**, From the end of the 19th century, governance was partly transferred to the national and international levels and to the private actors of the agri-food system.

#### **2. ... Towards evidence and the setting up of a food governance**

##### 2.1 Cities recover sight on the food issue

But, **in 2018, networks of cities are being formed to act on food and contribute to the development of sustainable food systems** around the world. Food have popped up in cities plan for action in various cities around the world. Cities have realized that they have levers to regulate some pieces of the food system

##### 2.2 Food governance and Urban Food Planning : ideal objectives and limits

Ideally, **these policies try to connect the various dimensions of food, the various stakeholders and scales of action** related to it. **Urban Food Planning has emerged**. But, despite the awareness of the need to develop integrated food policies and governance, **the initial sectorization remains to be overcome**.

### Reading materials

Pothukuchi, K., & Kaufman, J.-L. (2000). The food system. A stranger to the planning field. American Planning Association. Journal of the American Planning Association, 66(2), 113–124. <https://doi.org/10.1080/01944360008976093>

Morgan, K. (2009). Feeding the city: the challenge of urban food planning. International Planning Studies, 14(4), 341–348 <https://doi.org/10.1080/13563471003642852>

## Quiz questions

### 1. Why food used to be central for local public authorities till the end of the 19th century ?

- Because the « nourishing mayor » was asked to regulate the food system
- Because it guaranteed social peace and ensured political stability

### 2. What happened by the end of the 19th century ?

- Food governance was partly transferred to the national and international governments
- Food governance was partly transferred to the private actors of the agri-food system
- Local authorities got disengaged from the food issue
- Food system got sufficiently efficient to get regulated by its own

### 3. How can we characterize food regulation during the 20th century ?

- comprehensive
- sectorialized

### 4. What has caused local governments to re-engage on the food issue ?

- the flaws of the actual food system
- the demands of the food system stakeholders
- the development of citizens actions

### 5. What does a good food governance needs to articulate ?

- actors, thematics and scales of actions
- diverse food planners

### 6. What is a food planner ?

- Someone who uses planning to build sustainable food systems
- Someone who organizes the availability of food for all in the city

### 7. What is the main limit of food governance today ?

- sectorization
- health-nutrition prism
- cities spreading

## Questions for discussion forum

1. To go further toward more embedded, sustainable and fair food systems, what local governments and food planners could do ?



## Relation to territories for a diverse and resilient food system (Paola Migliorini)

### Title of the lecture

Relation to territories for a diverse and resilient food system

### Goal of the lecture

The objective of this lecture is to reflect on/understand the roles/importance of embedded food systems for the overall food system sustainability with particular focus on diversity and resilience of the food system.

### Content

- Introduction on agrofood diversity and resilience
- How to improve them?
- Sustainability in the food system: Spatial, social, economic, cultural, environmental aspects of food systems – a summary
- Methodologies to assess dimensions of sustainability

### Reading materials

1. Peano, C., P. Migliorini and F. Sottile. 2014. A methodology for the sustainability assessment of agri-food systems: an application to the Slow Food Presidia project. *Ecology and Society* 19 (4): 24. [online] URL: <http://www.ecologyandsociety.org/vol19/iss4/art24/>
2. Migliorini P, Galioto F, Chiorri M, Vazzana C (2018). An integrated sustainability score based on agro-ecological and socioeconomic indicators. A case study of stockless organic farming in Italy. *AGROECOLOGY AND SUSTAINABLE FOOD SYSTEMS*, ISSN: 2168-3573, doi: 10.1080/21683565.2018.1432516

web site:

3. SAFA: <http://www.fao.org/nr/sustainability/sustainability-assessments-safa/en/>
4. TAPE: <http://www.fao.org/agroecology/tools-tape/en/>

### Quiz questions

1. **The 3 level of Agrobiodiversity are (multiple choice):**

- genetic, specific, landscape
- intraspecific, Interspecific, transpacific
- ecological, economic, social

2. **Resilience is (True/False)**

the capacity to recover quickly from difficulties.

TRUE

3. **What are the main dimensions of sustainability? (multiple choice):**

- ecological, economic, social (+ cultural, political/institutional)
- good, clean and fair
- right to food, access to resource production, equity in distribution

4. **How would you define sustainable agriculture? (multiple choice):**

- A it includes food availability, access, stability and utilization
- B The one “that meets the needs of the present without compromising the ability of future generations to meet their own needs”
- C “the capacity of agroecosystem to maintain production over time, over long term ecologic limitation and socioeconomic pressing”

### **Questions for discussion forum**

1. From your perspective, what are the roles/importance of embedded food systems for the overall food system sustainability?
2. In your respective case studies, what could be improved? And how (plan of action)?

## Relation to territories for a diverse and resilient food system – part 2 (Paola Migliorini)

### Title of the lecture

Relation to territories for a diverse and resilient food system

### Goal of the lecture

The objective of this lecture is to reflect on/understand the roles/importance of embedded food systems for the overall food system sustainability with particular focus on diversity and resilience of the food system.

### Content

#### **1. How to assess sustainability in the food system?**

Spatial, social, economic, cultural, environmental aspects of food systems – a summary

=> **Different methodologies** exist to assess dimensions of sustainability. We will present you (e.i. TAPE, OASIS, SEAGA, SAFO, ..) and you will compare them.

#### **2. What is diversity? What is resilience?**

=> Diversity and resilience – what type of diversity and resilience exists in food systems? And how to improve them?

### Reading materials

5. SAFA: <http://www.fao.org/nr/sustainability/sustainability-assessments-safa/en/>
6. TAPE: <http://www.fao.org/agroecology/tools-tape/en/>

3. Peano, C., P. Migliorini and F. Sottile. 2014. A methodology for the sustainability assessment of agri-food systems: an application to the Slow Food Presidia project. *Ecology and Society* 19 (4): 24. [online] URL: <http://www.ecologyandsociety.org/vol19/iss4/art24/>

### Quiz questions

#### **1. How do you define sustainability in food?**

Open question

#### **2. What are the main dimensions of sustainability?**

- ecological, economical, social (+ cultural, political/institutional)
- good, clean and fair
- right to food, access to resource production, equity in distribution

#### **3. What type of diversity and resilience exists in food systems? And how to improve them?**

Open question

### Questions for discussion forum

3. From your perspective, what are the roles/importance of embedded food systems for the overall food system sustainability?
4. In your respective case studies, what could be improved? And how (plan of action)?