Sustainability assessment of agricultural and food systems

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Learning outcome

After this course you should be able to:

• understand the concept of sustainable agriculture and food systems;
• describe how to define it;
• give example of sustainability assessment of agriculture and food systems;
• implement how to measure sustainability with sustainability indicators.

Photo by Paola Migliorini

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The concept of sustainable agriculture 1

From SUSTAINABLE DEVELOPMENT:

1. the development that "meets the needs of the present without compromising the ability of future generations to meet their own needs". (Brundtland Commission, formally the World Commission on Environment and Development, United Nation 1983)

2. the development that, in the agriculture, forestry and fisheries sectors, conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable". (FAO Council, 1989).

SUSTAINABLE AGRICULTURE and FOOD SYSTEMS

(Gomiero, et al. 2011; Pretty, 2008)
The concept of sustainable agriculture 2

- Social: bearable, equitable
- Environment: sustainable, viable
- Economic

(Ikerd, 1993)
Two approaches to sustainability (Hansen, 1996), as:
1. philosophical approach
   alternatives strategies
   best practices
2. goals
   system property (structural and functional)
   spatial boundaries
   and time scale

Conway (1987) defined sustainability as resilience: ‘...the ability of a system to maintain productivity in spite of a major disturbance’.

“the capacity of agroecosystem to maintain production over time, over long term ecologic limitation and socioeconomic pressing” (Altieri, 1987).
Agricultural sustainability 1

Being a complex issue, “sustainability” depends on the perspective taken when looking at the system.

Sustainable for who?
Several conceptual frameworks and methodologies have been developed to assess agricultural and food sustainability and they use different indicators at global, international and farm levels.
Framework and methodologies to assess sustainability: some example at farm level

• **FESLM**: An *International Framework for Evaluating Sustainable Land Management*.

• **PSR** (Pressure-State-Response) and **DPSIR** (Driver-Pressure-State-Impact-Response indicators)

• The **MESMIS** framework. Evaluating the sustainability of complex socio-environmental system.

• **RISE**, a method for assessing the sustainability of agricultural production at farm level.

• **MOTIFS**: a monitoring tool for integrated farm sustainability.

• **LCA** (Life cycle assessment) of Swiss farming systems: I. Integrated and organic farming. II intensive vs extensive
Framework and methodologies to assess sustainability: some example at farming and food system level

- **AESIS**: An indicator-based framework to evaluate sustainability of farming systems
- **GCF** (Good, Clean and Fair): A methodology for the sustainability assessment of agri-food systems in Slow Food context
- **SOAAN** (Sustainable Organic Agriculture Action Network) IFOAM
- **SAFA** (Sustainability Assessment of Food and Agriculture Systems) FAO
Agricultural sustainability

- Sustainability concept
  - Understanding the meaning
- Principles of Sustainability
  - Objectives to be achieved
  - What should be sustain:
    - System boundaries
    - Spatial and Time scale
- Selection of indicators
- Type of indicators
Sustainability Indicators: measuring sustainability performance 1

How to judge?

• System evolution over time
• Comparable systems
• Optimal objective
• Threshold limit

(Measuring the immeasurable)

(Bell and Morse, 1999)
Sustainability Indicators: measuring sustainability performance 2

(OECD, 1999; Pacini et al., 2003; CEC, 2006)
Example of first approach “Best practices”:

(SOAAN, 2013)
Example of second approach “Goals”:

SAFA Sustainability Assessment of Food and Agriculture systems (FAO, 2013)
How sustainability is communicate?

SOME EXAMPLE of FOOD Products from the market

(Festi G. and Morandina B. 2013)
1st Level: Certification

- Lipton tea: corporate range of Rainforest Alliance Certified Farms
- Gran Moravia cheese: water foot print

- First sin of green-washing (sin of hidden trade-off)
- Delegation approach
- Attempt to "recognition"
- Lack of interest in the identity of the consumer

http://sinsofgreenwashing.com/findings/the-seven-sins/
2nd Level: sustainability commitment

To farmer:
• Ben & Jerry’s Ice Cream: “Caring dairy”

To consumer:
• Lavazza Fondazione: Tierra!

✓ Direct recruitment, engagement builds tension with a future horizon
✓ Farmer-learning; Consumer-follower
3rd Level: participatory sustainability

• Toyota – Glass of Water (no food!)

✓ strong implication on the production side,
✓ willingness to participate the (former) consumer to a transformative movement of social practices
Thank you!

- read the paper
- I’m available for questions and discussions
Reference list

• Altieri M. **1987.** *Agroecology, the scientific basis of sustainable agriculture*, Westview press, Colorado.


• FAO, **2012.** *Sustainability Assessment of Food and Agriculture Systems (SAFA) – Guidelines. Draft 4.0 - compact version’,* Rome, Food and Agriculture Organization of the United Nations,


Reference list


• Ikerd, J.E. 1993. The need for a systems approach to sustainable agriculture Agriculture, Ecosystems and Environment, 46: 147-160.


Reference list


• SOAAN 2013, The Best Practice Guideline for Agriculture and Value Chains, IFOAM. Available at http://www.ifoam.bio/sites/default/files/best_practice_guideline_v1.0_ratified_with_cover.pdf

Web and Video reference

- LIPTON: [http://www.youtube.com/watch?v=bxRbCxiK0bA](http://www.youtube.com/watch?v=bxRbCxiK0bA)
- LAVAZZA CSR:
  - [http://www.lavazza.co.uk/uk/lavazza-world/sustainability-report/](http://www.lavazza.co.uk/uk/lavazza-world/sustainability-report/)
- TOYOTA: [http://www.youtube.com/watch?v=NI6LMXynmds](http://www.youtube.com/watch?v=NI6LMXynmds)