Agroecology and sustainable food systems

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Innovative Education towards
Sustainable Food Systems

ASPECTS OF SUSTAINABLE FOOD SYSTEMS

A GUIDE FOR INNOVATIVE EDUCATION TOWARDS SUSTAINABLE FOOD SYSTEMS

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AGROECOLOGY AND SUSTAINABLE FOOD SYSTEMS

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Agroecology has been defined variously as a science, as practices, and as a movement, depending on the country and organization that embraces this vision [1]. One overarching definition that has guided the development of agroecology in recent years is the 'ecology of food systems' approach [2, 3]. This moves beyond the context of the more material spatial scale of the field and farm agroecosystem with relatively defined borders and enters the wider dimensions of the food system (Figure 1).

Agricultural production should provide sufficient food for the world's population while being environmentally friendly, socially acceptable, and economically beneficial for farmers. In addition, food products should also be available at affordable prices for low-income populations without negatively impacting nutritional quality. The foundations of the agricultural model needed to achieve these goals lay within the different practices which farmers apply to crop and livestock production. Some of these practices can be considered as agroecological practices [4] if they effectively valorise ecological processes and ecosystem services through their integration as fundamental elements in the development of agricultural strategies. Furthermore, sustainable food systems have to be built so that they better connect farmers to consumers and that they establish supply chains where economic benefits are fairly shared among the stakeholders and along the chain.

Food systems with no or a maximum of one intermediary (short supply chains) succeed in re-connecting producers and consumers. Numerous initiatives flourish all over Europe such as farmers' markets, on-farm selling, community supported agriculture, food box

schemes, and coop shops, but they represent only a tiny part of food flows. Nowadays a challenge is to re-establish this connection within mainstream food systems organized in long supply chains with several intermediaries (processors, logisticians, marketers, distributors, retailers…) and to develop mid-tier supply chains [5]. The issue is to maintain the link between food and its ecological and social conditions of production and transformation all along the chain (Figure 2). Telling the socio-ecological history of food, a sustainable food system is able to involve producers, consumers and other stakeholders feeling connected by shared values. Two examples are presented to illustrate this.

Figure 1 *The food systems approach in agroecology. Food systems connect farmers, consumers, supply chain intermediaries and other stakeholders through food and agroecosystems. These systems are strongly influenced by different factors and impacts from policies, society, economy and environment.*

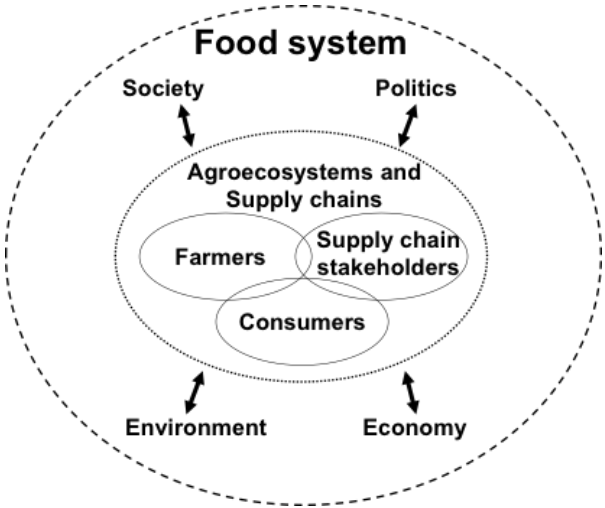

Figure 2 *Short supply chains keep the link between food and its ecological and social conditions of production and transformation (Photo: Alexander Wezel)*

The first example is about an initiative by a grain processor, the Dupuy Couturier mill in the department of Loire in France. This mill specializes in the production of organic flours and high quality flours. In 2017 this food system consists of 80 farmers producing CRC®-certified wheat (culture raisonnée contrôlée - controlled integrated agriculture with environmental requirements) on 7.000 ha, a cooperative that transports and stores the grains, the mill, and 120 bakers who produce the bread under the associated brand "Le Forézien" and sell it locally. The production comprises about 4.000 tons of grain and 2.500 tons of flour p.a.. The CRC® certification, recognized by an official third party, guarantees the traceability of the products, defines the production characteristics (no traces of pesticide residues, wheat stored without treatment, and good environmental practices including recently added biodiversity objectives), and results in the 20% premium above commodity prices that the growers receive.

Consumers appreciate the local origin and human scale of the supply chain in which all the participants know each other and work in partnership to ensure quality, traceability and food safety.

The second example is an initiative of cattle breeders and the urban community of Roanne in France selling "100% local beef burgers" that claims to support preserving the typical bocage landscape (mixed woodland and pasture), local economic activity and agriculture. They use Charolais cattle that are grass based fed and fattened on-farm. About ten breeders are involved together with a local slaughter house, a processor and 15 local supermarkets. All the partners agree on an economically viable price for breeders and everyone's commercial margins are discussed in the network.

These two examples show how a food system approach address a wide variety of issues related to organization between actors, negotiation, social relations, networking, employment, distribution of economic benefits as well as local and rural development. The challenge is to experiment with new practices on the farm but also outside the farm, in the factories, in the artisan production facilities and the offices, to establish new types of partnerships between all actors.

At a global scale, the food systems approach in agroecology also deals with a large variety of issues such as food sovereignty, alternative and local food networks, social agricultural networks, food crises, food security, right to food, and food markets [6, 7]. In conclusion, sustainable food systems have to be built on agroecological practices and production, in connecting farmers to consumers, and in developing supply chains where economic benefits are fairly shared among the stakeholders and along the chain.

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ABOUT SUS+

Innovative Education towards Sustainable Food Systems (SUSPLUS) is project that supports cooperation between eight European universities to develop, implement and widely disseminate innovative educational materials and methods in the subject matter of sustainable food systems. In the face of global population growth, resource constraints and growing environmental as well as public health concerns, there is a strong need for a shift towards more sustainable development. Most of these global problems are strongly influenced by unsustainable food systems therefore high priority is given towards developing strategies to improve sustainability of food production and consumption models. At the same time there are very few study programmes and modules targeting this important subject globally and sustainable food is still a niche market in many European countries, hardly supported by well-educated and skilled university graduates. SUSPLUS provides university students with necessary knowledge, competencies and skills to support this important sector, and contributes thereby to increase their employability. SUSPLUS is funded by Erasmus+, which is the European Union's programme to support education, training, youth and sport in Europe. It contributes to the Europe 2020 strategy for growth, jobs, social equity and inclusion, as well as the aims of ET2020, the EU's strategic framework for education and training. Erasmus+ also aims to promote the sustainable development of its partners in the field of higher education, and contribute to achieving the objectives of the EU Youth Strategy.

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