

## What is agro-ecology ?

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### 1. Definition

Agro-ecology is a concept that inspires more and more people, but also means different things to different people. There is no single way to define or practise agro-ecology, but the concept unifies different groups of scientists, practitioners in the food system, and social movements.

Originally, Altieri (1983)<sup>2</sup> defined agro-ecology as **the application of ecological principles to agriculture**. Twenty years later, **agro-ecology was enlarged to the whole food system** linking production with the food chain and consumers. This new definition allowed to also analyse the socio-economic and political dimensions of food systems. Agro-ecology became an interdisciplinary method that questioned scientific and social borders. Finally, agro-ecological research needed to take into account the relation between science and society. Associations, citizens, consumers, practitioners... can accept, but also refuse to take up new methods and technology. These social actors may suggest new or transform existing research questions, modify the methodology, and contribute with local or traditional know-how. This insight made Wezel et al. (2009)<sup>3</sup> conclude that **agro-ecology means either a scientific discipline, agricultural practice, or political or social movement**. Agro-ecology has become a concept of action that includes all these three dimensions.

As a scientific discipline, agro-ecology **questions the dominant agronomic model** based on the intensive use of external inputs. It **questions** as well the **dominant ecological model** that separates the protection of biodiversity from the production of food. As such, it proposes an additional new role for farmers as stewards of the landscape and biodiversity. As a social movement, agro-ecology criticises the effects of the industrialisation of the agricultures in the world, and the globalised market economy that is decoupled from productive and ecological constraints. As an alternative, this

<sup>1</sup> Stassart, P., M., P. Baret, V., J.-C. Grégoire, T. Hance, M. Mormont, D. Reheul, G. Vanloqueren, and M. Visser. 2012. Trajectoire et potentiel de l'agroécologie, pour une transition vers des systèmes alimentaires durables (available on <http://hdl.handle.net/2268/130063> ). Pages 25-51. In D. Vandam, M. Streith, J. Nizet, and P. Stassart, M., editors. Agroécologie, entre pratiques et sciences sociales. Educagri, Dijon.

<sup>2</sup> Altieri AM (1983) Agroecology, the Scientific Basis for Alternative Agriculture. Berkeley, U.C. Berkeley.

<sup>3</sup> Wezel A, Bellon S, Doré T, Francis C, Vallod D, David C (2009) Agroecology as a science, a movement and a practice. A review. *Agronomy for Sustainable Development* 29, 503-515.

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social movement explores other ways of **agriculture, based on autonomy** and the **prudent use of resources**.

## 2. Principles

As the definition of agro-ecology is rather wide, a better understanding of the concept can be obtained by exploring the principles that guide researchers, practitioners and social actors active in the field of agro-ecology. The following list proposes such a set of principles, however not to be understood as a closed framework.

- Recycle biomass, optimise and close nutrient cycles.
- Improve soil conditions. This means in particular improving organic matter content and biological activity of the soil.
- Reduce dependence on external, synthetic inputs.
- Minimise resource losses (solar radiation, soil, water, air) by managing the micro-climate, increasing soil cover, water harvesting...
- Promote and conserve the genetic diversity of crops and animals.
- Enhance positive interactions between the different elements of agro-ecosystems, by (re-)connecting crop and animal production, designing agro-forestry systems, using push-and-pull strategies for pest control...
- Integrate protection of biodiversity with production of food.
- Integrate short-term and long-term considerations in decision-making. Aim at optimal yields rather than maximum yields. Value resilience and adaptability.
- Contribute to the transition towards sustainable agriculture and food systems. Identify lock-ins that impede this transition and propose pathways to unlock them. Propose new governance structures that support innovative niches of sustainability.
- Acknowledge the similarities and linkages between agricultural systems in the global North and South. The North can learn from agro-ecological experiences in the South and vice versa. Because of the increasing globalisation, the transition towards sustainable food systems asks for integrated and simultaneous solutions in North and South.
- Investigate existing power relations, decision-making processes and opportunities for participation in food systems. Investigate the role of citizens and consumers in food systems.
- Valorise the diversity of knowledge (local / traditional know-how and practices, common knowledge and expert knowledge) in the definition of research problems, the definition of people concerned, and in finding solutions.
- Promote participatory research driven by the needs of society and practitioners, while at the same time guaranteeing scientific rigor.



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- Develop knowledge and innovation systems that conserve and allow exchange of agro-ecological knowledge. Special attention should be paid to local knowledge, which is a scarce resource in itself and due to its specificity is difficult to disseminate.

These principles should also be reflected in new methods of agricultural education and training. Finally they should result in more autonomy for all actors in the food chain and in food sovereignty, the right of peoples to democratically define their own food and agricultural systems without harming other people or the environment.

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