

Becoming an agroecologist – fostering social learning and responsible action for sustainable food systems

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Photo by Megan Hodges on Upsplash

Key Messages and Recommendations

- MSc agroecology programmes in Sweden, Ethiopia and Uganda have developed new collaborations among students, academic departments and faculties, farmers and other stakeholders, both at national and international levels. The three programmes have stimulated transdisciplinary and action-oriented research and learning processes, which have catalysed new research methods and led to a deeper understanding of what is needed to develop sustainable food systems.
- To prepare students to tackle major challenges in food systems and take responsible action, it is essential to foster skills that promote lifelong learning. These include understanding of specific facts and farm design principles, as well as observation, reflection, participation, dialogue, and visioning.
- Decision-makers at universities need to support agroecological educational programmes that integrate holistic, interdisciplinary, stakeholder-engaging and action-oriented approaches. Funding for education needs to be tailored to interdisciplinary collaboration.
- The quality and success of agroecological education depend on recruitment from multiple disciplines, as well as training for teachers and researchers in alternative learning methods. New educational programmes in agroecology should include such teacher training, focusing on a co-learning environment that stimulates exchange of experience, information and knowledge.
- Agroecology needs further mainstreaming at all levels, not only in high level organizations such as FAO, IPCC and IPES, but also in local governments and universities. Farmer field schools and enhanced farmer-researcher-student collaborations have had successes in mainstreaming agroecological principles into local food production systems, promoting resource-efficient practices and the use of locally available renewable resources.

Food security is under increasing pressure. We need to produce enough food and distribute it more equitably, while maintaining healthy ecosystems and minimizing negative environmental impacts and preserving non-renewable resources. And all that needs to be achieved against a backdrop of a growing human population and climate change. Many researchers, policymakers and civil society organizations are promoting agroecology as a way to meet these needs through alternatives to current industrialized agriculture. Making this leap will require us to re-think our food system. Tailoring education to this mode of food production will play a key role in this transformation.

This brief is based on experience gained from the Master's Programme in Agroecology at the Swedish University of Agricultural Sciences (SLU) in particular, and on contributions from our partner programmes at Norwegian University of Life Sciences (NMBU) and Martyrs University in Uganda (UMU). The brief provides an overview of agroecology, describes how we educate agroecologists, and explains why it is vital to cultivate system thinking for developing sustainable food systems.

Agroecology for sustainable food systems

Although first developed as a scientific discipline, agroecology has evolved to include a set of agricultural practices as well as a focus on social change.¹ The three branches of agroecology are connected through their shared goals of sustainable development of food systems and through cooperation and knowledge-sharing across the different fields of work. Guided by the principles of ecology and equity, modern agroecology encompasses the study, design and management of farming and food systems that conserve natural resources while also being productive, economically viable, culturally sensitive and socially just.²



Figure 1. Teachers training in Uganda.

Photo by Erik Steen Jensen, SLU

Industrialized agriculture has enabled major increases in food production, but it has also contributed to degradation of soil, water resources and biodiversity, as well as to loss of resilience in agricultural systems, which today are highly specialized and rely heavily on external inputs of non-renewable resources. Even though sufficient food is being produced to feed the current world population, malnutrition and hunger prevail due to systemic problems, including unequal distribution and access to food and production resources. Inadequate education about nutrition plays a role too.

Agroecology deals with designing locally adapted and controlled farming systems that build on the functions of natural ecosystems, including agrobiodiversity, natural pest control and local nutrient cycling. It also tackles such issues as global equity in terms of nutrition and health, and control over what and how food is produced and distributed. This is done through bottom-up and participatory approaches, empowerment of small-scale and resource-poor farmers, and by reconnecting food producers and consumers. FAO identified agroecology as an approach to address many of the 17 sustainable development goals, including mitigating climate change, establishing responsible consumption and production, reducing inequality and ending poverty and hunger.³

From knowledge to transformational action

Achieving sustainable food systems at a global level will require major changes in how production systems and societies are conceptualized and structured. While there is an abundance of knowledge about systemic problems and possible pathways towards sustainability, “there is often a much larger gap between knowledge and action than between ignorance and knowledge”.⁴

That is why it is so important to shift education towards action-oriented learning, and to integrate experiential knowledge from food systems practitioners with research results from multiple scientific

disciplines. In the agroecology MSc programmes, we draw from the concept of experiential learning developed by David Kolb,⁵ who described a cycle that moves from concrete experience to reflective observation, abstract conceptualization, and active experimentation (see Figure 2).

Exchange of knowledge and mutual learning

Agroecological education places value on both scientific and experiential knowledge. It is also placing an increasing focus on co-creation of knowledge. Farmers’ experience is recognized as valid in contributing to farm design, as is students’ prior experience in contributing to team learning in the classroom.

By enrolling students from various educational backgrounds, an interdisciplinary and integrative environment is created where students and teachers have the opportunity to exchange knowledge and learn from each other (i.e. co-learning). Often, classes are made up of students from various countries, which provides multiple perspectives from farming systems and food cultures. This helps to create connections between local problems and the global food system, and understanding of how these interact and affect each other. The diverse knowledge and experience forms a basis for mutual learning and systemic problem-solving.

“During the agroecology programme I became even more aware of that everything is interconnected, and I have learned that we often have to find local solutions in order to tackle global problems. I have also learned that if we want to find solutions to complex problems, diverse people with different backgrounds have to work together.”

Jörg John, agroecology alumnus from Germany. From the foreword to his MSc thesis Developing a Market for Organic Lentils: Qualitative Insights from a Farmer-led Producer Group in Germany. Available at: stud.epsilon.slu.se

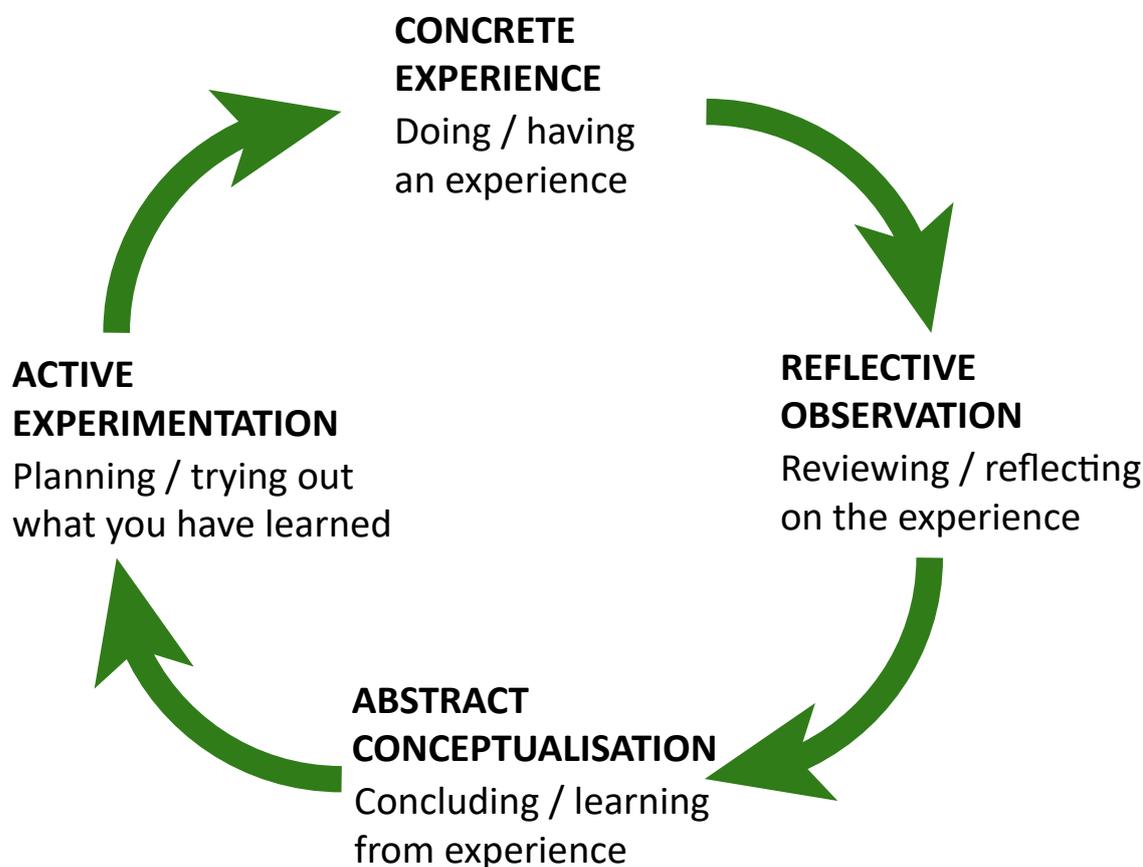


Figure 2. The experiential learning cycle developed by David Kolb plays a key role in how we teach in the Agroecology MSc programmes.

Shaktima López Hösel, adapted from Kolb, 1984.



Figure 3. Students at farm visit during the first course at the MSc Agroecology Programme, SLU, Sweden.

Photo by Erik Steen Jensen, SLU

Learning landscapes in agroecology

Accepting that the complex problems facing our food systems have no simple answers, we intend for agroecologist education to act as a catalyst for autonomous and continuous learning, for students, teachers and researchers alike. Agroecologist will have to deal with major challenges in an uncertain future. To prepare students to tackle these challenges and take responsible action, it is necessary to catalyse a learning process to acquire specific facts and farm design principles, as well as help students develop capacities of observation, reflection, participation, dialogue, and visioning, which promote lifelong learning.⁶

In contrast to conventional educational strategies that start with memorizing facts and theories, our agroecological education programmes immediately immerse students in real-life cases. Students meet farmers through farm visits and study open-ended farm cases compiled as digital documents. Open-ended cases do not imply pre-defined steps or “right” answers, but allow for several potential solutions to the problem. Students practice working with tools for sustainability assessment and systemic analysis, such as participatory rural appraisal tools and SAFA Guidelines (FAOs Sustainability Assessment of Food and Agriculture Systems). In doing so they straight away incorporate the perspective of the farmer, recognizing their invaluable role and practical knowledge (Figure 2).

Developing skills for handling complexity

Sustainable development requires skills in dealing with complexity and multi-stakeholder collaboration. Students do group work based on the combination of approaches described above, in which they train in identifying ecological, economic and social components of the farm and its interactions with the wider environment. The perspectives are thus unique to each particular case, with challenges yet to be solved, and students strive to propose actions that can improve the sustainability of the farm. Potential actions are site specific, rather than menu-driven and generic, and take account of farmers’ perceptions and visions.

Students thus develop skills in systemic problem solving by integrating knowledge from different disciplines through practical experience. They learn to approach every new problem from multiple perspectives and envision alternative options. The curriculum of the SLU programme also includes studies in project management and process facilitation, which explore the importance and difficulties of collaboration between individuals with different knowledge backgrounds and experiences. Students develop and practice their roles as managers and facilitators of collaboration between different stakeholders in dynamic surroundings, and in a safe academic space, which prepares them for transdisciplinary work in farming and food systems, as well as policy work at multiple levels.

“Agroecology for me isn’t just a study but a conviction, and I have used it as a guide in deciding where I do and do not want to work. I’ve focused on jobs which are working to develop alternative food systems and address – at least to some extent – the root causes of the problems we currently face in our food systems.”

Emma Tozer, agroecology alumna from the US. She now works for a farmers’ market association in California, conducting research and raising public awareness about local food systems.

Outcomes from the Sida-funded agroecology MSc programmes in Sweden, Ethiopia and Uganda

Between 2009 and 2012 the Swedish International Development Cooperation Agency (Sida) funded the development of the MSc agroecology programmes at SLU in Sweden, Mekelle University in Ethiopia and Martyrs University in Uganda. These were modelled after the MSc programme at the Norwegian University of Life Sciences (NMBU). In these innovative programmes teachers were trained in methods for facilitating experiential learning and co-creating knowledge on agroecological principles and practices (Figure 3). After eight years of teaching, there are multiple and important outcomes from these programmes. Teachers and researchers recognize that

agroecology education has stimulated inter- and transdisciplinary research and learning processes within and between universities. The programmes have catalysed new research methods and deepened existing ones that address the complex chains and webs in future food production, as well as challenges linked to climate change and the future survival of the global population. It has also increased fruitful collaboration among students, academic departments and faculties, farmers and stakeholders at both national and international levels. Moreover, new pedagogical methods have been developed to engage students and add value to diversity of prior knowledge. These methods include student-organized seminars, stimulating student-to-student learning, and learning in the field.

“The agroecology education programme has given us new ways to understand and investigate sustainability of agriculture and food systems: it has become more intuitive to take an inter-disciplinary perspective on problems and solutions.”

Georg Carlsson, Teacher and Director of Studies for the Master’s Programme in Agroecology at SLU.

Need for continued capacity building and improved collaboration across disciplines

Despite the many positive outcomes, establishing agroecologist education has introduced new challenges. Teachers are required to start working with new learning methods and develop a new role as facilitator. This involves moving out of the comfort zone of one-way information transfer and taking on roles as mentors and catalysts in a participatory learning landscape. Fortunately, such training was provided for the first batch of agroecology teachers at SLU, Mekelle University and Martyrs University, thanks to funding from Sida for

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the joint development of the programmes. But with teachers leaving and new teachers without such training joining the workforce, knowledge gaps have arisen, and some teachers fear that over time the roles as mentors and catalysts in a participatory learning landscape may phase out. Ongoing training for both current and new teachers is needed for the future success of the programmes. Moreover, efforts need to be made to create and maintain interdisciplinary teams of teachers, and to build capacity and a common understanding of agroecology among teachers, supervisors and examiners.

Overcoming institutional challenges

All these efforts require time, resources and new ways of working across different disciplines. The transformation towards inter- and transdisciplinary education and research is challenging the very organizational structure of universities, which are traditionally built on clearly defined and separate scientific disciplines. Such structures present an obstacle for broad systems learning and action, and are not limited to educational institutions, but rather a consequence of compartmentalized and short-term thinking throughout society, not least within the policy arena.⁷

While it is likely that the success of programmes in agroecology depends on university management and teachers seeing the importance of agroecology within the university curriculum, the future improvement of agroecologist education also depends on a broader recognition of this emerging paradigm.

Although agroecology has been promoted by FAO for many years, there seems to be problems in translating its recommendations into policy and practice. As stated by Francis et al.⁶ “It has been suggested that we recognize the challenges, and have many tools available, but lack the economic, social, and political will to pursue changes that will increasingly be viewed as inevitable.” There is an urgent need for political will to invest in education and research that moves beyond business as usual and short-term profit, and towards systemic problem-solving and responsible and transformational action. Policymakers also need to incorporate agroecological principles and practices into national and local food strategies and use tools such as public procurement to support local, regenerative and diverse farming in the immediate region. These are not changes to be taken lightly and will involve focus and effort at all levels of decision making in academia, government, and the farming and food sector. We owe a successful adoption and transition to agroecology to future generations.

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