



Environment Governance and Sustainability

Under the Theme: Agroecological Advances In Sustainable Agriculture And Ecosystem Stewardship

Climate change, nature, land, biodiversity loss, and waste have been recognized as the **triple planetary** crises threatening the sustainability of the planet. All of them are attributable to unsustainable production systems in agriculture over time, as the world's growing population's need for food, fiber, and other resources increases exponentially (FAO, 2017; Nur et al., 2020). For developing countries like Uganda, where over 70% of the population relies on agriculture, the problems of climate change, environmental degradation, land and biodiversity loss, as well as waste management, are an even more imminent threat to the people. To address these problems, several management proposals have been advanced by different stakeholders, with varying levels of progress worldwide. One of such efforts being promoted is agroecology. But what is agroecology, and how has it progressed? To explain a bit more on this, we give a brief account hereafter about the evolution of agroecology, based on a comprehensive review by Wezel et al. (2020)

Evolution of agroecology

Agroecology emerged as a result of environmental movements in the 1960s, in response to the impacts of industrialized agriculture after the Green Revolution. The green revolution focused on enhancing yields and economic returns; however, the environmental and social factors associated with the production technologies applied were not adequately addressed, e.g., the impacts of toxic substances such as pesticides and industrial pollution, as well as the distribution of benefits arising from the green revolution. Agroecology emerged as a set of practices to improve indigenous farming practices (as opposed to high-input, chemical-intensive agriculture promoted by international corporations) to enable sustainability, in Latin America. This account is given by Wezel et al. (2020), and he refers to others, to Altieri (1989a, 1995 and Gliessman (2007), and LEISA (2008). It involved the conservation of natural resources, including agrobiodiversity, water and livestock management, and the adoption of soil fertility and anti-erosion management practices, as the basis for sustainable development in arid and sub-humid

areas. Contemporary, multinational chemical and seed companies that defined their new-generation products and transgenic crops as essential to long-term sustainability, actors promoting identification and relevance of traditional knowledge systems and resource poor small farmers as the target groups for transitions, and those promoting partnerships between the farmers and extension workers to enable sustainable agriculture also considered this agroecology (Wezel, 2020 refers to earlier works for example by Norgaard, (1984); Altieri, (2002); Warner, (2007) and Raza, (2007) for details on these concepts as advances in agroecology..

In chronology, Wezel et al. (2020) summarize advances in agroecology as follows: from the 1930s to the 1960s, agroecology was primarily considered a science discipline. From the 1980s to the 90s, it evolved into a movement and practice countering industrial agriculture at three levels: (1) plot and field scales, (2) agroecosystem and farm scale, and (3) whole food system. Its perception and interest differed by geographic regions; for example, in France, it was considered a farming practice and a movement. In Germany, it was regarded as a scientific discipline, while in the USA and Brazil, all three dimensions were taken into consideration (Wezel et al., 2020, referring to his earlier works, Wezel (2009, for a more detailed account of the evolution of the agroecology concept. Contemporary, the understanding and definition of agroecology remain multifaceted, as the brief review below demonstrates.

Current definitions of agroecology

(1) Early scholarships treated agroecology principally as the application of ecological science to agriculture. Authors such as Besin (1930), Klages (1942), Altieri (1993), and Hecht (1995) argued that the core task was to study ecological interactions within fields or whole agroecosystems and translate that knowledge into agronomic practice (Wezel et al., 2009, 2020). Subsequent work demonstrated that this ecological focus already implied integrated management, bringing together crops, soil,



animal, and landscape processes to guide on-farm decisions (Friederichs, 1930; Azzi, 1956; Tischler, 1965, cited in Wezel et al., 2009).

that agroecology integrates research, education, collective action and systemic change across ecological, economic and social domains.

- (2) By the early 2000s, the field had widened. Agroecology was framed simultaneously as a science, a set of farming practices and social movement (Dalgaard et al., 2003; Wezel et al., 2009). As a science, it offered a holistic framework for studying agro-ecosystems; as a practice, it provided guidelines for designing resilient, resource-conserving farms (Altieri, 1989; Gliessman, 1997); and as a movement, it underpinned campaigns for rural development, environmental justice and sustainable food systems.
- (3) Researchers also began to treat agroecology as a transdisciplinary field. It draws on ecology, agronomy, economics, sociology and farmers' experiential knowledge, using systems thinking to balance four key properties of agro-ecosystems: productivity, stability, sustainability and equity (Conway, 1987; Douglass, 1984; Gliessman, 1990; Altieri, 1995; Ruiz-Rosado, 2006). This broadened lens led to an "ecology of the entire food system" analysing global networks of production, distribution, and consumption, as well as the relationships between producers and consumers (Francis et al., 2003; Buttel, 2007; Gliessman, 2007).
- (4) Institutional definitions now reflect this breadth. The FAO calls agroecology "an integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems ... optimising the interactions between plants, animals, humans and the environment while considering the social aspects needed for a sustainable and fair food system" (FAO, 2015, p. 3). The EU-funded PrAEcTiCe project similarly defines it as "productive, sustainable, resilient and environmentally safe farming and food systems, combining indigenous knowledge with cutting-edge science ... and promoting the transition to fair, just and sovereign food systems" (EU, 2025).
- (5) In practice, civil-society networks such as PELUM Uganda utilise agroecology in all three senses — science, practice, and movement — to build climate resilience and food sovereignty. Their work illustrates Wezel et al.'s (2020) argument
- (6) In all its concepts, definitions, and dimensions, however, it has generally been agreed that agroecology is a new discipline or interdiscipline, or transdiscipline, whose operational tools and ideas are still under development and remain difficult to identify. For example, (a) there are limitations with most of its definitions. For example, when considered as a movement, the question being asked is: What kind of movement can be regarded as agroecology? Are farmer groups working for food security, sovereignty, and autonomy? Political movement of the local population for rural development, as was experienced in Brazil? Farmer groups-movement aimed at extending alternative agriculture through social partnerships to better respond to ecological and environmental challenges within relatively specialised agricultural production systems, as was the case in the USA? Characteristically, nevertheless, the movements are action-oriented and happen in response to the need for sustainable development and sustainable agriculture. (b) When considered as a set of practices, what specific practices can be regarded as part of agroecology? (c) Overall, the practices are seen as new, modified, or adapted techniques that contribute to environmentally friendly, ecological, organic or alternative agriculture. Practices in developing countries, such as those used to improve traditional or indigenous agriculture or achieve organic farming certification, are being employed. Practices and or techniques for soil fertility and organic matter management, resource conservation, low external input systems and biological pest management that are not ecologically harmful and deployed to achieve environmentally friendly organic or alternative agriculture even if not scientifically proven and, practices that in principle, encourages farmers and extensionists to participate in the design of new systems, technological applications and to contribute to social movements to achieve sustainability goals and to produce knowledge (Rosset and Altieri, 1997; Altieri, 2004 in Wezel, 2009; 2020).

Clarity and or the gaps in knowledge on agroecology

In addition to the above review, Wezel et al.

(2020) make a review of the knowledge gaps that compound the need for clarification. For example, when agroecology is defined as the scientific basis of a sustainable development strategy emphasizing conservation of natural resources and agrobiodiversity, food sovereignty, and empowering rural social movements, it appears as an advocacy activity, a parallel to research and recommendations. When considering the ecology of food systems, several questions remain to be resolved, including what new concepts, models, and methods need to be developed or adapted in their studies. What curriculum content and practice is required in which geographic regions and at what level of operations (plots, farm, ecosystem), social, cultural, and ethical dimensions (Lieblein et al., 2000; 2007a and b in Wezel et al., 2020)?

Agroecology is an interdisciplinary concept whose practice, scope, science, knowledge, and methodologies are still evolving. Therefore, avenues for collecting requisite data on the subject and its relevance in agriculture, natural resources, and environmental management approaches and governance are now timely and worthwhile. Knowledge from such a forum would help narrow the gap in the various unknowns curtailing the advances of agroecology as a suitable pathway to sustainability in climate, land, water, biodiversity, wildlife, habitats, environment, and waste management, the most crippling planetary challenges currently. Characterised by 13 principles currently that includes, promoting recycling, input reduction, soil health, animal health, biodiversity, synergy, economic diversification, cocreation of knowledge, social values and diets, fairness, connectivity, land and natural resource governance and participation in practices and policies is expected to tackle most of the current planetary consumption, production and waste management challenges highlighted in this background and bring about sustainability (Wezeel et al., 2020).

Rationale for the AASAES – UMU Conference
Uganda Martyrs University- UMU August 2025 Conference themed Agroecological Advances in Sustainable Agriculture and Ecosystem Stewardship (AASAES) to be convened by the Faculty of Agriculture in Collaboration with the Directorate of Graduate Studies Research and Enterprises and, Partners, aims to provide an annual forum for researchers, practitioners, policy makers, academia, private sector, civil society and the general public to annually share knowledge, experiences, and lessons emerging from their practice, research and

policy engagements in and/or from interactions with Agroecology in Uganda and elsewhere.

AASAES – UMU Conference Sub-themes for manuscript alignment

Sub-themes for the AASAES-UMU conference aim to capture emerging findings that potentially address the unknowns in methodological, practical, and knowledge creation avenues for agroecology, as detailed in items 1-9 presented earlier in this section. Authors are called on to submit full manuscripts in areas of their interest, considering knowledge gaps reviewed in items 1-9 above, and considering any of these thematic areas.

- ❑ Agroecology, Agriculture, Water, Land, Climate, Biodiversity, Environmental Sustainability
- ❑ Ecosystems, Populations, Species, Genetic resources, and Sustainability
- ❑ Governance, Security, Peace, Sovereignty, Sustainability in Environment and Natural Resources Management
- ❑ Contemporary Environment Management Systems: The niche for agroecology
- ❑ Agroecological Innovations for Resilient Food Systems and Sustainable Landscapes
- ❑ From Farms to Ecosystem: Agroecological solutions for Uganda's sustainability
- ❑ Sustainable Farming Systems and Climate Resilience
- ❑ Policy, Governance, and Agroecology
- ❑ Inclusive and equitable agroecological transition (woman-led agroecology and youth engagement)
- ❑ Social movements in agroecology
- ❑ Markets, Economics, Poverty, Culture, and Sustainability (Organic value chains, agroecology financing, urban-rural linkages)
- ❑ Spirituality and natural resource conservation
- ❑ Energy sources, technologies, regulatory and financing frameworks,
- ❑ Knowledge, Knowledge Systems, Agroecology and Environment
- ❑ Methodologies, Methods and Tackling Sustainability Concerns in Agriculture, Environment and Natural Resources Management
- ❑ Agrochemical pollution includes herbicides, fertilizers, pesticides, and veterinary drugs.
- ❑ Current advances in Systematic reviews and Meta analysis.
- ❑ Modelling Approaches in Agroecology and Environmental Sustainability (e.g., Mathematical modelling, Predictive models, systems dynamics, spatial modelling, optimization

in resource use, risk and resilience analysis, data-driven decision support)

- ❑ Software Engineering, information systems, and artificial intelligence in Agroecology.

Authors could also focus their papers on particular areas of interest among the 13 agroecological principles, and this may include any of the following;

- ❑ Soil health
- ❑ Human and Animal health
- ❑ Biodiversity
- ❑ Economic diversification
- ❑ Social values and diets
- ❑ Input reduction
- ❑ Recycling
- ❑ Fairness
- ❑ Connectivity
- ❑ Land and natural resource governance
- ❑ Co-creation of knowledge
- ❑ Plastic Pollution

Expected outputs

- The Conference presented manuscripts published as peer-reviewed books with an International Publisher or UMU Press, and as journal articles in the Journal of Tropical Agroecology and the Journal of Science and Sustainable Development.
- The university, institutions, and individuals involved in the conference will enhance their visibility and impact in advancing knowledge in the field focused on by the conference, both in Uganda and internationally.
- Presentation skills, knowledge, and professional capacity of the conference organizers, presenters, and participants were built.
- Research and other Partnerships and collaborations among conference participants and institutions involved in the conference.
- Improved public awareness and comprehension of recent developments in agroecology, facilitated through targeted dissemination efforts during and beyond the conference

Guideline for Authors

Send a full manuscript of not more than 15,000 words, references and appendices inclusive. Written in English, Font size 12, spacing 1.5, Times New Roman.

Send your Full Manuscripts to all the following email addresses: dgsre@umu.ac.ug, pnjadoi@umu.ac.ug, mmurongo@umu.ac.ug, glubega@umu.ac.ug, arc@umu.ac.ug; info@manderainstitute.com, tumchaz34@gmail.com, owsduganda@gmail.com

Note: The conference is open to the general public and is free of charge.

References

1. Nur H.A. Bahar, Michaela Lo, Made Sanjaya, Josh Van Vianen, Peter Alexander, Amy Ickowitz and Terry Sunderland, 2020. Meeting the food security challenge for nine billion people in 2050: What impact on forests?, Global Environmental Change, Volume 62 (102056). ISSN 0959-3780, <https://doi.org/10.1016/j.gloenvcha.2020.102056>. (<https://www.sciencedirect.com/science/article/pii/S095937801930929X>). FAO 2017. The Future of Food and Agriculture – Trends and Challenges Rome (2017).
2. Wezel, A., Herren G.B., Kerr, B.R., Barrios, E., Gonçalves R. L. A., Sinclair, F .2020. Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review. Agron. Sustain. Dev. 40, 40 (2020). <https://doi.org/10.1007/s13593-020-00646-z>
3. Wezel, A., Bellon, S., Doré, T. et al. 2009. Agroecology as a science, a movement and a practice. A review. Agron. Sustain. Dev. 29, 503–515 (2009). <https://doi.org/10.1051/agro/2009004>.

Conference Mode: Hybrid (Virtual and Physical)

Venue: Resource Centre, Uganda Martyrs University, Nkozi Campus

Deadline for Full Manuscripts submission: 7th August 2025

Conference Date:
14th August, 2025

ORGANISATIONS PARTICIPATING/SUPPORTING THE AASAEs CONFERENCE

