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AGRO SCHOOL FOR LIFE

USC1513

Agroecology and Environment (AGE)

Direction
Joséphine Peigné, Director

Research topics
- Agronomy (animal and plant) and ecological sciences

Key figures
- 19 lecturer-researchers
- 4 engineers and 3 technicians
- 4 PhD and post-docs

Keywords
- Agroecology
- Agronomy
- Biodiversity
- Ponds
- Natural resources
- System approach

Mission and objectives

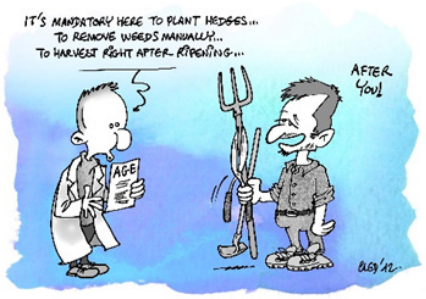
The 'Agroecology and Environment' contract-based unit (AGE) works on designing and assessing sustainable production systems based on agroecological practices. The unit is particularly interested in organic or low-input farming systems and in both land-based and aquatic systems (fish ponds).



Photos: ©AGE

The main objectives are:

- Co-designing innovative production systems with professionals, integrating agroecological practices based on plant and animal diversity. This collaborative approach relies both on 'on-farm' experimentation networks in the Auvergne-Rhône-Alpes region and on methodological research into designing prototypes of innovative systems (located in our testing networks);
- Assessing the ecosystem services supplied by these systems through on-farm experiments or modelling tools.



The unit's work mainly involves:

- The environmental and organic processes supporting agricultural production;
- The preservation of natural resources;
- The agronomic, technical and socio-economic performances of agroecological systems.

Regional centre
Lyon-Grenoble Auvergne-Rhône-Alpes

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Research

The unit's research focuses on two themes.

Co-designing work with both agricultural and professional stakeholders on different cropping and production systems:

- Organic or low-input cropping systems featuring multiservice cover crops to reduce the use of inputs and to improve soil fertility and the sustainability of systems (relay cover crops, crop associations, direct seeding under cover crops);
- Crop and grazing livestock systems that include perennial plants (grassland, cereals or permanent cover) to foster the production of ecosystem services;
- Solutions involving 'stacked practices' that incorporate plant diversity (intra- and inter-specific) to regulate pests;
- Solutions based on preserving natural biodiversity to ensure more sustainable fish pond production.

Assessing co-designed systems:

- In farmland using factorial and systems experiments (multi-location) on the farmers' and fish farmers' fields, with an agroecological approach applied to provisioning services (agricultural and fish production, soil fertility) and regulating services (invasive plants, weeds, pests and diseases, pollinators and beneficial insects, water and nitrogen cycle).
- With tools ranging from field observation methods to mathematical models.

Collaboration and expertise

The unit's main academic partners at the local level are the Université de Lyon and in particular the LEHNA unit – Laboratory for Ecology of Natural and Man-impacted Hydrosystems.

Its national partnerships include research institutes (INRAE, CNRS) and, for operational purposes, technical institutes such as Arvalis (Institute dedicated to field crops) and Terres Inovia (technical centre for the oil and protein sector).

At international level, its long-standing European partners are: FiBL Research Institute of Organic Agriculture (Switzerland), University of Pisa and Sant'Anna School of Advanced Studies (Italy), University of Barcelona (Spain), Wageningen University (The Netherlands), Swedish University of Agricultural Science (Sweden), KU Leuven (Belgium). Its historical North American partners are the universities of Cornell, Wisconsin-Madison, Manitoba and Minesota.

Scientific facilities

- Research laboratories (agroecology laboratory, chemistry laboratory)
- On-farm experimental sites: long-term systems trial, experimental network

Teaching

The AGE unit's staff are mainly lecturer-researchers. The unit is therefore heavily involved in ISARA's bachelor programme. At the Master level, it runs a specialised course in the engineering programme and it coordinates two final-year specialisations as well as an international 'Agroecology' engineering degree.

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