

GAP Project Synthesis

On the brink of an ecological, food and energy crisis, agriculture needs a paradigm shift. Despite a great ambiguity in the current discourse, there are at least two ways for agroecological modernization. The first one aims to produce massively by limiting environmental impacts, controlling crops and inputs by remote sensing and replacing chemical inputs with organic inputs without changing the logic. The second way is agroecology in its radically accomplished form, a big shift of paradigm that places farmers, experimental science and socio-economic players at the heart of innovation. Agriculture based on the foundations of accomplished agroecology considerably opens the field and is not limited to organic farming. Designed with a systemic approach, it is sustainable, healthier and environmentally safer. Agroecology is not production driven, but is it productive? In any case, the means and levers to be activated at the agronomic, economic and social levels are not defined in advance. Global Agroecology Program, with AllEnvi, A Rocha France and Oriskany, is part of this new paradigm: thinking globally the agroecological transition while acting locally.

Thinking globally the transition means defining the socio-economic dimensions in terms of innovation, in order to reorient agricultural systems and their financing, and thus effectively support the development of agroecology and ensure food security on the brink of climate change. It means improving the understanding of socio-economic factors and barriers. How can we adopt a new agriculture with a reduced ecological footprint that integrates the diversity of our societies and the economic structure? The abandonment of chemical inputs, the use of farmers' seeds (reusable), the low use of water and oil offer economically viable fertile paths. This is what the project at the global level based on concrete local experimentation must demonstrate. Through a participatory science approach, the academic world will have to qualify the socio-economic solutions of agroecology as an alternative to conventional agriculture. By opening the field to the 'low-carbon' and 'biosourced' circular economy, the goal is to understand the scientific results and issues in order to inform and raise awareness among the targeted public (farmers, elected representatives, financiers) of territorial agro-ecological practices. The pooling of reflections will lead to a transdisciplinary analysis and a trans-organization, accompanied by a doctoral thesis. This work will propose solutions for a reinvented framework of transitional social business models so that it can be financed sustainably outside the CAP.

Acting locally means considering the plurality of experimental pathways through the establishment and evaluation of different agroecosystems to

ensure sustainable production (yield and quality) adapted to the environmental conditions of the first experimental site identified: the Domaine des Courmettes (06 – France). Each of them must demonstrate their ability to achieve these objectives in order to make them proven agro-ecological methods and to contribute to the specific solutions sought by farmers and those accompanying them. The replacement of industrial inputs by the coexistence of biodiversity within agricultural land requires a fundamental rethinking of how to manage crop protection and resources (nitrogen, phosphorus and water). By relying on off-field spaces, rotations, species combination or intraspecies genetic diversity (heirloom and modern varieties), it is possible to increase biodiversity in agrosystems (soil taxonomic diversity). Varieties, including those chosen by biodiversity conservatories, will also be selected for their ability to promote 'ecosystemic services' such as mutual symbiosis with soil microorganisms (nitrogen-fixing bacteria, mycorrhizal fungi with arbuscules) beneficial for plant development. Associations between varieties of fruit trees and vegetable plants will be tested to determine beneficial couples (water stress or bio-aggressors). However, there are still questions about the properties that could result from this: should we expect a better capacity to absorb disturbances, greater stability or better multi-functionality for increased durability? This is the issue this scientific field will tackle by exploring the acquisition of fundamental knowledge in the modalities of their application. Transmitting and teaching the agroecological methods that will be developed are two priorities. Adapted seminars or graduate training (with universities and research centres) will be offered to all players.