Agro-silvo-pastoral systems in West Africa

How can we work with farmers in West Africa to design innovative, intensive and ecologically friendly crop-livestock systems?

Family agro-silvo-pastoral systems are in the majority in West Africa. They are the main lever for development. They are also facing a multiplicity of demographic, economic and climatic changes, and their productivity is not making sufficient progress to satisfy the changes in demand. Intensification is the preferred type of pathway to increase the agricultural production, but it exposes farmers and the environment to a range of risks and degradation processes. Action research in partnership serves to design more productive, more sustainable crop-livestock systems based on the principles of ecological intensification.

Partners

Centre International de Recherche-Développement sur l’Élevage en zone Subhumide (Cirdes).

Institut de l’environnement et de recherches agricoles (Inera).

Institut d’économie rurale (IER).

Université Polytechnique de Bobo-Dioulasso > Institut de Développement Rural (UPB/IDR).

UPGC > Université Péléforo Gon Coulibaly (Korogho).

Cirad > Research Units: INNOVATION, SELMET, AGAP; AIDA.

Benefits

Rural farming households will be able to boost production sustainably thanks to innovations based on the principles of ecological intensification.

Farmers’ organizations and development support bodies, policy-makers and the local authorities bénéficieront de nouvelles connaissances et instruments pour soutenir une agriculture plus intensive et plus écologique.

Students, researchers and current and future management staff will be able to build their skills in the whole range of disciplines and fields of use in designing such systems.

The scientific partners will boost their scientific reputation by publishing their work in international journals.

Associates

West Africa > farmers’ organizations and territorial authorities; NGOs and development support organizations; State services (agriculture, livestock, health, environment); West and Central African Council for Agricultural Research and Development.

France and Europe > research and higher education establishments (INRA, Montpellier Supagro).

Global > ILRI, ICRISAT, CIAT, CIFOR (CGIAR); Commonwealth Scientific and Industrial Research Organisation (CSIRO, Australia).
Expertise and technical skills

- Analysis of the dynamics of crop-livestock systems [local practical know-how, innovations].
- Analysis of agricultural advice services and territorial governance and changes.
- Modelling of biomass and nutrient flows within farms and territories.
- Co-design of technical and organizational innovations [action research in partnership].
- Building stakeholders’ capacities and support of innovation [organizations and advice to farms, authorities and decentralized natural resource management].
- Multi-criteria assessment methods and studies of the impact of innovations [establishment of indicators and methods].
- Project identification, feasibility studies, management and assessment [ex-ante, mid-term and ex-post].

Some current projects

**Sustainable intensification options** • OID, 2011-2015, AusAID/WECARD € 2M

Boosting farm productivity will not be sufficient to meet demand. Intensifying production also raises sustainability issues. The OID project is using multi-stakeholder platforms to promote combined crop and livestock farming and thus generate massive, sustainable intensification effects.

**Agro-ecology-based aggradation-conservation agriculture** • ABACO, 2010-2015, European Commission/FSTP, € 3.5M

With the disappearance of fallow, soil organic fertility has to be managed differently. The project has identified production systems compatible with the principles of conservation agriculture, and modelled and tested cropping systems that make use of soil covers and cereal-legume intercropping.

**Environmental efficiency and sustainable livestock production** • EPAD, 2010-2015, ANR-France/Systerra, € 0.9M

The ability of a system to produce the maximum effect with the minimum of resources lies at the heart of agro-ecology. The project is looking at the energy and environmental efficiency of crops-livestock farms, and has demonstrated that combining crop and livestock production helps to improve that efficiency.

**Support of cotton supply chain governance, productivity, and farm sustainability** • PASE II, 2014-2016, AFD-France/R&D Component, € 1.7M

When the rate of change speeds up, decisions have to be made based on up-to-date, local information. To facilitate steering on a supply chain and collectivity scale, the project has set out to develop an information system on agrarian dynamics. To boost farmers’ incomes, it will be working with their organizations to come up with innovations.

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