Family farming still overwhelmingly dominates global agriculture. Capital-intensive agribusiness only accounts for the main market supply of some agricultural products—such as soybean and palm oil—but family farming massively contributes to global production (cereals, tubers, fats, stimulants, fibres, animal products). Family farms are intimately linked to the agricultural landscapes and terroirs shaped by their practices and thus play a critical role in natural resource, biodiversity and land management, as well as in preservation of cultural diversity and local development. They contribute directly to generating income and employment for a large segment of the world population.

Family farms therefore have a pivotal role in the evolution of societies and environments upon which they are highly dependent. Their centuries-old transformation has accompanied the slow process of transition from predominantly agricultural to more diversified economies where secondary and tertiary sectors provide the bulk of the wealth and employment. As a consequence of world demographics, around 75% of agricultural workers are located in Asia, 20% in Sub-Saharan Africa and 5% in the rest of the world. Urbanization is under way on all continents, but most of the population in Africa and South Asia will remain rural for several decades.

Despite these reconfigurations and the growth of urban areas, farmers and their families occupy the largest part of the ekumene on all continents, including those where agriculture is no longer peoples’ main activity. Rural areas, even in the most ecologically marginal zones, have been shaped by remarkably diversified agricultural development, thus demonstrating the high flexibility and adaptation capacity of family farming. This adaptability is both spatial and historical. Farmers have been able to adapt under heavy constraints, while concomitantly being technically and organizationally innovative when the setting is favourable, particularly when benefitting from public support via agricultural policies (credit, training, extension, market regulations).

This diverse range of social and environmental contexts, scales and timeframes is being documented and analysed by Agropolis member institutions in Montpellier (CIRAD, CNRS, IAMM, INRA, IRD, etc.). Nine research teams directly or indirectly devote research to these dynamics, often in partnership with research organizations in developing countries throughout much of Sub-Saharan Africa, North Africa, Latin America, South and Southeast Asia. Studies are carried out on the dynamics of farms hampered by land pressure, on the resilience of farming systems and their contribution to sustainable development, on the effect of changing family strategies on production systems and natural resources, on new opportunities for the adoption of agroecological practices arising from urban growth, on the social management of seeds and on revitalizing local economies, to name but a few.

Various theoretical and empirical approaches are implemented, involving a range of disciplines related to earth and life sciences, and especially social sciences. Innovative designs of new research frameworks provide effective responses to new challenging issues (e.g. the World Agriculture Watch). As illustrated in this chapter, specific approaches, sometimes comparative and often interdisciplinary, are needed to deal with the diversity of situations and questions to be addressed. The expertise of Montpellier researchers in this area is well established, as they are regularly called upon by policymakers and various stakeholders. One of the greatest challenges is to continue, delve deeper and pool research and data in order to gain further insight into the complexity of past and current dynamics, to anticipate change and effectively support the future of family farming worldwide.

Bruno Losch (UMR ART-Dev) & Stéphanie Carrière (UMR GRED)

* The inhabited part of the world
New patterns in family farming and territorial development

The joint research unit Actors, Resources and Territories in Development (UMR ART-Dev, CNRS/UM3/CIRAD/UPVD/UM1) conducts research on regional/territorial development from economic, political and social perspectives by connecting globalization and local dynamics. These situations are analysed with a focus on the construction and mobilization of a set of tangible and intangible resources by stakeholders.

Main teams

UMR ART-Dev
Actors, Resources and Territories in Development (CNRS/UM3/CIRAD/UPVD/UM1)
70 scientists

UMR GRED
Governance, Risk, Environment and Development (IRD/UM3)
45 scientists

UMR MOISA
Markets, Organisations, Institutions and Stakeholders Strategies (CIRAD/INRA/Montpellier SupAgro/CHEAM-IAMM)
Around 60 scientists

These major research themes concern rural and urban development trajectories and their interactions, the issue of natural resource governance and questions related to mobility and circulation processes in the globalization setting. Topics are studied at different geographical scales with a specific focus on governance and public policies.

The unit works on several continents, in many geographical and political contexts that may differ markedly in terms of types and stages of development. The objective is to make effective use of this diversity through explanatory comparative approaches. At international, national and regional levels, it aims to play a dual knowledge-generation and -dissemination role for the scientific community. It also develops expertise to address the high social demand regarding regional planning and development issues (appraisals, surveys, operational research, cooperation).

Family farmers are very active in research carried out by the UMR, being major stakeholders in the spatial dynamics which have a heavy impact on them.

The unit works on conceptualization and generation of typologies of family farms and forms of production, especially via its involvement in the World Agriculture Watch hosted at the Food and Agriculture Organization of the United Nations (FAO, see below). Family farms, most of which are pluriactive and fulfil many functions in territorial development, are thus one of the major research focuses of the ART-Dev’s analyses. Besides research on the characterization of family farming, the unit’s researchers investigate the evolution of thinking and the diversity of development models related to agriculture, the specific treatment of family farms by public policies, and how the latter are contributing to the related debates.

The unit aims to meet its partners’ social demand and is therefore also involved in enhancing the capacities of development stakeholders. Family farmers and their organizations are directly involved through ongoing and targeted training modules. The training programmes in which the researchers are involved are also geared towards local governments (and their future leaders) which can play a significant role in supporting family farming.
Territorial dynamics and new rural development patterns in Africa

In the coming decades, the African continent will experience major restructuring resulting from the doubling of its population—an additional billion people by 2050—in a context already subject to high tension due to pressure on natural resources, persistent poverty and the impact of international competition on local economies. In this novel situation, territorial dynamics must be taken into account relative to population densification, migration and urban growth, so as to better address the employment demand, with the pending arrival of 330 million young people in the labour market over the next 15 years—60% in rural areas.

This is a major challenge for rural development policies, which must be based on a renewed strategic vision in order to promote sustainable growth to benefit as many as possible. This growth should be in the agricultural sector and based on greater rural diversification so as to accelerate structural change throughout the continent.

Family farming—the largest source of employment in Africa—is and will remain a major contributor in the change process.

UMR ART-Dev and the French Agricultural Research Centre for International Development (CIRAD) are collaborating with the New Partnership for Africa’s Development (NEPAD) to gain greater insight into ongoing and expected territorial restructuring processes. This collaboration, which benefits from ties already forged in the RuralStruc programme (2006-2010), has led to the publication of an atlas on ‘a new emerging rural world’ in Africa (with the participation of UMR MOISA, UMR TETIS and UPR B&SEF). The collaboration will continue under NEPAD’s new Rural Futures Programme, supported by the French Development Agency (AFD) and the International Fund for Agricultural Development (IFAD), which will be implemented from pilot regions representative of the diversity of African situations, as defined in association with the Regional Economic Communities and the African Union.

Bruno Losch, bruno.losch@cirad.fr


World Agriculture Watch

UMRs MOISA, ART-Dev, SELMET and TETIS and the internal research unit (UPR) Performance of Tree Crop-Based Systems are contributing to the World Agriculture Watch (WAW, or Observatoire des agricultures du monde). The main objective is to place the dynamics and performances of different types of agriculture (family farming, family business farms run with permanent hired labour, and corporations) back on the public policy agenda, while taking production and economic, social and environmental sustainability into account on local and global levels and anticipating future change.

This initiative provides a platform for knowledge creation, exchange and discussion. It is based on a network of observatories located in representative areas where significant structural changes are under way (e.g. high-risk agricultural production systems). The initiative aims to:

- document farm diversity, structural change, resilience to current constraints and sustainable development contributions
- conduct comparative spatiotemporal analyses
- raise awareness on potential crises and specific vulnerabilities, and propose potential policy options
- strengthen the capacity of observatories and local, national and regional stakeholders for collecting and analysing relevant information that could be used to fuel the policy orientation debate.

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This global initiative based in Rome (supported by FAO/IFAD/France) operates on the principle of pooling methods and tools implemented by national observatories within the network. These observatories address national concerns on agricultural change, especially related to family farming.

Globally, the key issue concerns changes in forms of agricultural activity organization regarding, on one hand, agribusinesses or hired labour-based firms and, on the other, family farms run solely with family members or with external hired labour but where the families play a key role, as illustrated by the close link between the general and working capital.

Pierre-Marie Bosc, pierre-marie.bosc@cirad.fr

For further information: www.observatoire-des-agricultures-du-monde.org

World Agriculture Watch

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Pierre-Marie Bosc, pierre-marie.bosc@cirad.fr

For further information: www.observatoire-des-agricultures-du-monde.org
**Small family farms in France**

The specificity and future of small farms are at issue due to the increased concentration of agricultural production and land. In 2000, more than four out of ten small family farms in France had an SGM of less than 40 ESU. These latter farms, which declare that at least one active family member is a head farmer, are on the decline and only accounted for a third of all farms in 2007. Very small farms, with an SGM of less than 16 ESU, represented 20% of all small family farms in 2000, a quarter of which had disappeared in 2005. These farms are mainly located in the area from the Pyrenees to the northern Alps (see map). A descriptive analysis conducted by UMR MOISA characterized these farms and their trajectories on the basis of the findings of the agricultural census carried out in 2000 and the 2005 structural survey.

Very small farms have specific production features. They are overrepresented in sheep, goat and beef cattle production systems. Over the 2000/2005 period, their output rate was lower than that of other farms, with a growth rate among the lowest recorded.

Small farm trajectories and the growth rate of sustainable farms vary according to the production orientation. Farms specialized in market gardening thus have very high outputs and growth levels. These trajectories are related especially to the production orientations and the extent of commodity development. Quality labels (‘Label Rouge’, etc.) are often utilized by small farms. These labels are a growth factor for this farm category, contrary to other labels such as the ‘organic farming’ label, which is a marginal category in France and seems to have had very little impact on small farm growth rates.

Although income source diversification could boost growth, small farms diversify less than other farm categories. Data from the 2010 agricultural census could now be analysed to update these results and focus on aspects such as farm marketing strategies.
Is urban family farming useful for urban development? A case study in Meknès, Morocco

Urban farming patterns in developing countries depend on the urban development dynamics. In Meknès (Morocco), the presence of urban farming could be explained by the low spatial coverage of production activities—intensive indoor dairy farming, market gardening—limited to interstitial areas such as valley bottoms and steep hillsides. Small family production units run the farming activities, providing employment for one urban household member, sometimes in addition to a full-time or seasonal employee. Hundreds of Meknès households derive most of their income and part of their food from these activities. Urban agriculture supplies consumers with fresh milk and various vegetables through short informal distribution channels. Despite its socioeconomic impact, this farming system is overlooked by agricultural support services since it is run outside of the framework of agricultural development standards and plans. Milk, for instance, should normally be sold via agroindustrial milk collection services to ensure the product quality.

Market garden crops are irrigated with surface water (wadis and springs) mixed to various extents with waste water, a source of microbial contamination that could be dangerous to consumers. This family farming is still tolerated since its social function is recognized by public authorities. The functions of this farming system and associated ecosystem services should be taken into account to initiate a programme of interventions geared towards improving its contribution to the sustainable development of agriurban systems: quality production, soil protection, maintenance of emblematic landscapes combining gardens, trees and housing, boosting urban dwellers’ environmental awareness, provision of jobs and acceptable income for families. This however requires political involvement in urban development schemes and the same extent of support (financial, advice) as that provided to farmers in other types of farming system in Morocco.

Patrick Dugué, patrick.dugue@cirad.fr
& Hubert de Bon, hubert.de_bon@cirad.fr

Urban and periurban farming provides an opportunity to adopt agroecological practices—the compost issue

The production and marketing of high added-value crops such as vegetables is suitable for small agricultural areas when farmers’ homes, plots and markets are not far apart. There is of course a high pollution risk, but this could likely be mitigated by adopting and implementing innovative agroecological practices in the light of the growing demand of urban communities, which are better informed and aware of health and even environmental issues.

Regarding composting in Africa, much municipal solid waste is composed of organic matter. Raw material is thus available for the production of compost and organic amendments that could be used to enhance the soil composition and fertility. Studies under way by the internal research unit (UPR) HortSys are thus focused on determining the best institutional, logistic and social strategies that could be implemented to promote green sectors devoted to supplying family farms with alternative inputs or to complement conventional inputs. Urbanization, agglomeration and urban density processes provide a basis for viable alternative or complementary sectors to transform what was previously considered a constraint into opportunities.

Laurent Parrot, laurent.parrot@cirad.fr
A research and training platform on rural land tenure in developing countries

The Pôle foncier de Montpellier—a rural land tenure research platform based in Montpellier—aims to revitalize and structure collaborations between different teams from Agropolis institutions conducting research and offering training on rural land issues in developing countries. This platform was set up as a scientific interest group (CIRAD/CIHEAM-IAMM/IRD/Montpellier SupAgro). Although it is based in Montpellier, it promotes close collaborations with external researchers, particularly from developing countries. The scientific activities include three annual ‘thematic seminars’ and an annual ‘doctoral seminar’ that provide a forum for discussion and scientific exchange between PhD candidates and experienced researchers from different social science fields specialized on land issues.

These seminars are organized by the platform, in partnership with the Maison des Sciences de l’Homme de Montpellier and the Comité Technique Foncier et Développement (AFD/French Ministry of Foreign Affairs). The talks presented at the thematic seminars and doctoral seminar conferences are broadcast live* and can also be viewed later in video**. Les Cahiers du Pôle Foncier is a working paper collection that showcases the research of members of the platform, their partners and associated students.

Jean-Philippe Colin, pole.foncier@msh-m.org
For further information: www.pole-foncier.fr

* www.livestream.com/lamshm
** http://msh-m.tv

Family farming—relationships with biodiversity, conservation policies, territories and governance mechanisms

Research conducted by the joint research unit Governance, Risk, Environment and Development (UMR GRED, IRD/UM3) is focused on two main topics—interrelationships between societies and the environment and relationships between members of these societies in their approaches to the environment. These topics concern the ‘socioenvironmental issue’, hinged on governance and the environment. As this is a constantly evolving issue, it is essential to understand how new constraints and vulnerabilities, which are now an integral part of sustainable development, modify governance and land and resource management. The unit is structured around three priority lines of research:

1. biodiversity conservation and the dynamics of rural areas
2. governance and management of territories and resources
3. risk and vulnerability of societies and territories.

The unit’s scientists are specialized in different fields: geography, economy, anthropology, ethnoscience, agronomy, ecology, etc. Research on family farming relative to the environment, conservation policies, governance systems and territories essentially fall under research lines 1 and 2.

One of the aims of researchers working on line 1 is to gain insight into interactions between biodiversity conservation strategies, the dynamics of rural areas—including family farming—and ecosystems. Under the assumption that humans are an integral part of ecosystems, biodiversity conservation therefore cannot be understood independently of development processes and rural areas. Family farming and environmental objectives are reconciled within the framework of this new sustainable development requirement, and this can have an impact on local living conditions. Rural societies seldom consider territories and resources solely in terms of agricultural production, but also from an ecological and social standpoint. Their combined agricultural, pastoral, forestry, hunting and fishing activities take the natural dynamics into account, while contributing to cultural identity and social cohesion. The diverse and complex relationship between family farming and the environment also concerns the globalization of environmental issues and the conservation movement, and is affected by the weakening of ecosystems and practices. Finally, family farming is based on various types of land access, which depend on land-use practices, social standards and the history of state interventions in rural areas.

Research conducted under line 2 analyses the governance of access to land and natural resources in situations that are often marked by a broad range of competing standards, spatial competition, competition with agribusiness and political-land conflicts. This may lead to the restructuring of production dynamics, and often exclusion processes.
Influence of family strategies and practices on the spatiotemporal dynamics of agroforestry systems in southern Cameroon

SAFSE (Search for trade-offs between production and other ecosystem services provided by tropical agroforestry systems) is a project of the French Agence Inter-établissements de Recherche pour le Développement (AIRD). One of its teams includes researchers from CIRAD (UMR Innovation), the French Institut de recherche pour le développement (IRD – UMR GRED), Université de Yaoundé 1 (Cameroon) and Montpellier SupAgro (Institute for Higher Education in Tropical Agri-food Industries & Rural Development – IRC).

Since 2013, this interdisciplinary team (agronomy, socioeconomics, ecology, ethnobotany) has been gaining insight into the effects of family practices and strategies on cocoa agroforests in different ecological and socioeconomic areas in southern Cameroon. These constantly evolving family strategies are subject to different pressures in different regions. The research under way is focused on a diverse range of constraints and opportunities, based on the hypothesis that they have an impact on and induce changes in cocoa agroforests.

These agroforests, which date back to the early 20th century, were traditionally complex, multilayered and included many associated and useful tree species. These family managed agroforests were composed of hardy cocoa varieties introduced by the Germans. Biodiversity was high in these agroecosystems, thus ensuring substantial resilience to change (ecological, economic). Successive introductions of new varieties, advice provided by agricultural extension services, spatial and professional mobility, elite investment in villages or in newly cleared lands are all factors which, among others, contribute to expanding the planting of these agroforests beyond the original areas and also to shaping new types of agroforest. These factors sometimes just simplify the cocoa cropping system, thus reducing the ecosystem services provided.

The above-mentioned team combines ecological, agronomic and socioeconomic approaches to characterize the effects of these changes on the structure, species composition and spatial dynamics of cocoa agroforests via their impacts on family strategies in three contrasting forest zones in southern Cameroon.

Isabelle Michel, isabelle.michel@supagro.inra.fr
& Stéphanie Carrière, stephanie.carriere@ird.fr

For further information: http://safse.cirad.fr/le-projet/programme-scientifique/wp1-caracterisation-de-la-composition-structure-dynamique-du-systeme
Role of public-private partnerships—a case study on the development of fish farming in Brazilian family farming systems

Since 2001, CIRAD (UMR INTREPID) and its partners have been conducting research on innovation processes regarding fish farming on family farms in two Brazilian regions, i.e. Ribeira Valley (São Paulo) and Upper Itajaí Valley (Santa Catarina).

The theoretical frameworks are based on public policy assessment, studies on the local innovation system and sociological aspects of translation, with sociotechnical networks (and their construction) and associated controversies also taken into account.

Brazilian fish farming has developed differently in the two regions. In the first region, the fish farms have not been able to innovate in order to overcome the economic crisis they face. In contrast, in the second region, fish farms have been enhanced via technical and organizational innovations in response to several economic and climatic crises. Public policies should go much further than technical monitoring, and include organization, technical support, training, funding and the presence of a translator (required because of the joint involvement of different research platforms in the local innovation system).

These initiatives began through a CIRAD thematic research project (2001-2004) aimed at determining the relative importance of various factors driving the adoption or rejection of fish farming by family farmers in four countries with representative tropical situations (Brazil, Philippines, Nigeria and Cameroon). These research issues were then further pursued and developed in two other research projects:

- a project (2008-2011) conducted by the Coordenadoria de assistência técnica integral which involved the construction of a new fish farming system (based on Deuterodon iguape) in Ribeira Valley and the Litoral Sud region
- the INRA/CIRAD Ecologically Intensive Fish Farming (PISCEnLIT) project (2011-2013), with one site located in Upper Itajaí Valley.

Finally, a three-party cooperation between Brazil, France and Cameroon is planned based on the conceptual frameworks already developed.

Newton José Rodrigues da Silva, newtonrodrigues@cati.sp.gov.br

For further information: www.piscenlit.org

Several end-of-study dissertations have been completed at French and Brazilian universities and graduate schools. With the support of the Comité Français d’Évaluation de la Coopération Universitaire et Scientifique and Brazil, a PhD thesis (joint supervision CAUNESP de Jaboticabal and Agrocampus Ouest) was defended on the role of public policies on fish farming development dynamics.
Interrelationships between agribusinesses and family farms in Madagascar

Large-scale land appropriations are still under way in Madagascar. UMR TETIS is working with the Observatoire du Foncier* to monitor the impacts of these dynamics, promote transparency and public debate on these land contracts involving the State, and support the formulation of tailored land policies.

Most investors have halted their projects due to a lack of experience and capital, while others have planted their first crops on a few hundred hectares of land. Competition and complementarities with respect to the family farms differ depending on the setting, but some agrarian dynamics are similar.

The legal transfer of thousands of hectares of land to investors has transformed local land rights holders into squatters, despite the 2005 land reform that recognizes local land rights. Households that accept to surrender their land do so in exchange for compensation promises (rent, employment, infrastructures) or they pretend to be the owners although they are not the real landowners and land users. The losers are mostly cattle farmers who, for the richest of them, may react and violently oppose the companies or villages with which they have negotiated. Conflicts can flare up if the company does not keep its promises.

Only the poorest farmers work regularly with companies, while the others prefer to cultivate their own land for subsistence purposes. Income generated by these jobs thus benefits the poorest (often migrant) workers, but this does not offer a viable pathway out of poverty. Low land rent and low wages are attractive conditions for investors but they substantially increase the gap between the return on capital and on labour, and the differential between the added value that remains domestic and that is exported. In terms of social and spatial equity, these results should prompt a comparison with other development alternatives and business models (independent family farming, contract farming, large scale plantations, etc.).

Perrine Burnod, perrine.burnod@cirad.fr

* www.observatoire-foncier.mg

Forest management in family farming systems in Latin America

In the Brazilian Amazon, it is estimated that family farmers hold 1.2 million ha of forest on their properties. The forest code requires that a 50-80% share of their properties be preserved as forest reserves. Farmers are allowed to tap these forest resources within the framework of State-approved forest management plans. Unfortunately, due to the lack of adoption of appropriate techniques, cleared plots quickly become infertile, and after a few years the properties are completely bare and the remaining pastures are not very productive. The farmers then often abandon their properties and move to other frontier areas where they apply the same land clearing strategy. Preserving forests on smallholdings while improving farmers’ living standards is a huge challenge necessitating a radical change of practices.

Research conducted by CIRAD (UPR B&SEF) and partners in the Brazilian Amazon as part of the Floresta e AGriCultura (FLOAGRI, European Union [EU]) and Floresta em Pé (FEP, International Fund for Agricultural Development [IFAD]) projects between 2005-2010 showed that logging, especially in the framework of a farmer-forest business partnership, can play a vital role in the development of sustainable farming systems because timber sales generate primary income that may be invested in sustainable, environmentally intensive farming systems. However, these models could not be widely used without public policies to support the implementation of enhanced technical interventions and the development of sustainable farm forestry in close relationship with logging. Payments for environmental services and offset markets offer an alternative financial source for the development of sustainable farming systems while also combating poverty. The INVALUABLE and PESMIX* projects of the French National Research Agency (ANR) assess the impact of these instruments in family farming systems in Brazil, Costa Rica, Guatemala and Mexico. These payments may be provided in cash, as in Mexico, or be in the form of an agricultural and forestry investment plan, as in Guatemala, Costa Rica and Brazil.

Plinio Sist, plinio.sist@cirad.fr
& Driss Ezzine De Blas, ezzine@cirad.fr

* INVALUABLE project (2012-2015): Integrating assessments, markets and policies for biodiversity and ecosystem services
* PESMIX project (2011-2014): Payments for environmental services: new panacea or auxiliary for environmental management?
Intergenerational seed management in Kenya

Insight into factors that structure the diversity of genetic resources in situ is essential to optimize sampling and conservation strategies. Very little is currently known, for instance, on the anthropological factors involved. The diversity of species and varieties cultivated by Meru farmers on Mount Kenya was studied through a combined social anthropology/population genetics analysis.

Studies carried out by UMR AGAP researchers, in collaboration with French and Kenyan partners, have shown how the social organization of farmers—with their marriage, residence and seed exchange practices—contributes to shaping the genetic diversity of cultivated plants by promoting their adaptability to environmental conditions. The conventional genetic-environment interaction (G×E) was broken down into a triple interaction (G×E×S) to specify the social component (S) in order to explain the observed variability.

This model revealed the different environmental and cultural effects on the organization of diversity. Among the social organization levels, neighbourhood groups were found to represent an essential sociological unit with respect to heritage and seed exchange practices and were thus a key factor in agrobiodiversity organization. However, clans and age had less of an impact. The mother-to-daughter-in-law seed legacy practices, combined with residency rules, promoted variety adaptation to local conditions, especially in response to climatic variations. The community history and differentiation patterns were thus reflected in the cultivated species and varietal patterns.

The study of the social factors structuring genetic resource diversity is therefore an important prerequisite for the collection, conservation and improvement of these resources in a participatory framework, while providing a basis for the recognition of farmers’ rights.

Christian Leclerc, christian.leclerc@cirad.fr
Jean-Pierre Labouisse, jean-pierre.labouisse@cirad.fr
Geo Coppens, geo.coppens@cirad.fr
& Vanesse Labeyrie, vanesse.labeyrie@gmail.com
* in the following projects:
  - AfriCrop: Etude de l’histoire évolutive des plantes domestiquées africaines (French National Research Agency, ANR)
  - ARCAD: Agropolis Resource Center for Crop Conservation, Adaptation and Diversity
  - Subproject 3. Cereals in Africa: from advanced to under-utilized crops. www.arcad-project.org
  - PICREVAT: Predictability of climatic information to reduce the vulnerability of tropical agriculture (ANR)
  - ATP CIRAD: Reproduire des plantes, reproduire une société

Role of cooperatives in family farming dynamics in Peru

Under the Empowering Smallholder Farmers In Markets (ESFIM) programme, European research agencies (CIRAD, Wageningen University, Natural Resources Institute) are conducting studies in 19 countries in collaboration with market-oriented farmers’ organizations. Family farming changes and innovations should be thought out and managed collectively. Cooperatives have a pivotal role in local dynamics as a means of collective action.

In this setting, UMR Innovation collaborated with the Tallán-Chusis cooperative (Costach), which has been developing in northern Peru since 2007, with the aim of reviving the Pima cotton sector through economic solidarity. Despite the fact that the cotton grown in this area is of exceptional quality in terms of the fibre length, strength and fineness, the cropping area decreased from 60 000 ha to only 15 000 ha (2010) in 30 years. This was due to the fact that the local textile industry benefitted from the reduction in import taxes and replaced this local cotton by a poorer quality imported cotton, while still flaunting their exported textiles as being made with local cotton. In collaboration with the cooperative, UMR Innovation demonstrated that local Pima cotton is a very attractive niche product, but the market and production systems have to be reconstructed.

Costach must therefore focus on building regional and international relationships and regaining some of the added value by championing different parts of the cotton sector in order to compete with local industries. Costach was finally recognized by different stakeholders (Ministry of Agriculture, investment banks, municipalities) in 2011, and managed to negotiate purchase prices and arrange for its members to benefit from seasonal loans and preharvest advances. In 2012, the cooperative had 5 600 family farmer members (3-5 ha, cotton with a relay food crop) and was able to increase the Pima cotton cropping area to 12 000 ha. On the strength of this experience, Costach will build its own cotton ginning and spinning mill, supervise variety testing, begin a process to register the denomination of origin and thus help to revitalize the local economy.

Michel Dulcire, michel.dulcire@cirad.fr
For further information: www.esfm.org/collaborative-research/peru
Millet winnowing at Kabururu, Kenya. This process is designed to separate the grain from impurities.
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