

les dossiers d'**AGROPOLIS** INTERNATIONAL

*Expertise of the scientific community
in the Languedoc-Roussillon region (France)*



Family farming

Wild and cultivated biodiversity *and natural resource management*

Family farming is highly diversified from many standpoints. These farms feature myriad techniques, a broad range of knowledge and know-how and also an intricate combination of species and varieties arranged in a deliberate spatiotemporal pattern depending on the soil, uses and cycles.

Pooling wild and cultivated biodiversity as well as natural resource management in the same chapter underscores the fact that in many family farming systems these constituents are not perceived separately, but rather as a whole in which social, economic, political and cultural factors interact with biological, agricultural and ecological factors. Whereas higher education and research institutions tend to reproduce, respect and comply with expertise specialization, better management of multidisciplinary approaches is the challenge that should be addressed by studies and management of wild and cultivated diversity in the family farming setting.

This chapter highlights several examples of the ingenuity of family farming regarding wild and cultivated biodiversity management. For instance, in Madagascar, plant diversity stems directly from the cropping practices and crop management sequences used. This diversity in turn promotes the diversity of birds from protected forests that take advantage of the agricultural landscape shaped by farmers to nest, feed and breed. Some so-called service plant species are also grown for the purpose of integrated pest management. In central Cameroon, around 100 plant species that have a wide variety of uses—producing fruit, oil, drinks, bark (used for medicinal purposes), timber and fuelwood—have been inventoried in cocoa farms. This multifunctional mosaic also helps preserve soil fertility by providing shade which enhances cocoa tree growth. The many interactions that characterize family farm functioning are promoted and ‘plant-microorganism’ combinations are proposed to ensure more efficient nitrogen and phosphorus sequestration in Tunisia, Morocco, France and Burkina Faso.

International issues concerning family farming are also showcased via studies on biodiversity and its management. Among some 7 000 known crop species, only a few ensure global food security from a quantitative perspective. Other species that are overlooked on an international scale represent a reservoir of genetic and functional diversity which remains unexploited, despite the demonstrated high potential of these crops. The adaptation capacity of traditional millet varieties to climatic variations is, for instance, being investigated in Niger, while decentralized management systems are tested in Oceania, Africa, South America and Asia. Locally cultivated clones and varieties are distributed in a diverse range of ecological and cultural environments. Each benefits from the adaptation potential of plants originally bred in other areas. Studies on the impact of introducing new varieties have led to the development of a participatory breeding process involving farmers in Mali and other countries to promote the appropriation of resources that best meet farmers’ needs.

At a more global level, water resource access and sharing generally represent another crucial international and development issue as it increases the interdependence of local, regional and international stakeholders.

Research is also focused on the inventory, collection and organization of genetic diversity of plants that have been propagated by generations of family farmers until today. As their diversity results from both natural and human-oriented processes, cultivated plants must be considered inherently hybrid entities to be studied by multidisciplinary approaches, as clearly illustrated in this chapter.

Challenges in the study and management of wild and cultivated diversity could not be addressed without the involvement of around 10 Agropolis institutions, bringing together nine laboratories and nearly 550 scientists specialized on over 20 Mediterranean and tropical species and involved in research on five continents.

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