Thematic 2

What kind of production systems to achieve a sustainable management of natural resources?

Workshops under this theme will look further into the systemic approach, which is key to agro-ecology. It will focus on the interactions between the farm and its immediate surrounding environment and on the natural resources that are needed for agricultural production. Currently, these natural resources either constitute an asset in terms of production or are degraded and need restoration. The projects displayed will show successful strategies for the use of these resources and the changes required for their use, as well as their preservation, as part of a general move towards sustainable development and management practices.
As agriculture and forestry are increasingly hit by climate change, the projects displayed will look into knowledge and innovation and climate change adaptation practices in the farming and forestry sectors.

Three workshops will address this theme:

- the first one will deal with soils, essential for agricultural production
- the second workshop will focus on biodiversity, as an effective lever for the transition towards sustainable development and management practices and a resource requiring both protection and valorisation
- the third one will discuss climate-resilient farming and forestry systems, and water management..

- **Soils: fertility, fight against erosion and biology life**

For many years, soils have been regarded as merely an inert substrate, and loss of fertility was compensated for by the addition of chemical inputs. However, soil quality and health, and their crucial role for the ecosystem, have become again a major concern for farming and forestry sectors. This workshop will discuss soil management practices that help to combat soil erosion, increase and preserve soil fertility and biology, notably by increasing soil organic matter and through soil preparation and crop diversification. The introduction of protein crops and intermediate crops to improve the symbiotic relationships between plants and micro-organisms and to combat soil contamination and the negative effects of climate change (eg. through greater water retention and increasing carbon storage in soils) will also be discussed.

- **Climate resilient farming systems and water management**

Agriculture and forestry are directly affected by the effects of climate change (drought, rising temperatures, health risks, etc.). This leads to changing harvest dates, the emergence of new pests and diseases, and in general new conditions to which crops are not adapted. As a consequence, cropping systems will need to be adapted and planned according to new climatic conditions. New strategies and management practices will need to be explored and put in place. We are already witnessing some of these changes. For instance, water use and management is already a source of tension and conflict in many places, and this calls for changes in farming systems. As a result of this, in order to meet the qualitative and quantitative challenges involved in water management and reconcile the interests of farmers and other users and suppliers of water, the involvement of new, non-traditional partners becomes relevant, as well as bringing together farmers and the whole set of water users and providers.

At the same time, trees play a role in mitigating the effects of climate change (for instance, by contributing to carbon sequestration in the soil). Agro-forestry will be promoted as a mean to protect agricultural production (by, for instance, providing shade for crops and animals). Moreover, sustainable forest management practices that maximise carbon storage both above and under the soil surface are drivers of climate change mitigation.

- **Wild and cultivated biodiversity**

Promoting biodiversity within the farm and in its surrounding landscape, including within forests, constitutes both an objective and a lever in terms of ensuring the success of the agro-ecological transition. This allows increasing reliance on nature in order to limit or reduce the use of chemical products on the farm. Moreover, genetic diversity is a powerful resource for climate change adaptation and for increasing the resilience of agricultural and forestry ecosystems. This workshop will look into farming and forestry practices that promote biodiversity, and into the relationships that those involved in farming and forestry can build with other stakeholders in their regions with the aim to preserve biodiversity. Finally, this workshop will cover both crop and animal biodiversity and the promotion of varietal diversity, as means to enable farms to adapt to changing environmental and climatic conditions..