



There is an urgent need to cover the soils permanently with annual crops and trees, to recreate living soils, and generate a positive feedback to enhance biodiversity, water quality, fertility and productivity. It is possible and inexpensive to develop agroforestry at a universal scale.

AGROFORESTRY in the RIO +20 CONFERENCE

TREES OUTSIDE THE FOREST FOR OUTSTANDING BENEFIT AND SERVICE

Developed in many zones all around the globe, Agroforestry is often presented as a model for countries in the Southern countries, but it also has an important place in the rest of the world. In a competitive context of land utilisation and rarefaction of resources, the future of trees lies outside the forest as well, at the heart of farmlands. What could be better than having trees equally distributed over the territories in order to dampen climatic shocks, improve *water resources*, favour biodiversity, sustainably fill the soil with life and carbon while maintaining optimal agricultural productivity and reducing input location.

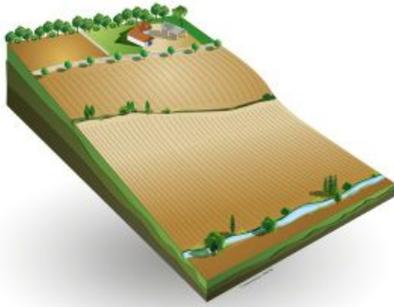
Produce and Protect: the innovative agroforestry of today relies on all forms of associations between trees and cultivation (or animals) on the same land (alignments, hedges, roadsides or river banks, sylvo-pastoralism, ecologically cultivated wood, etc.). It is an essential element in the durability and the performance of agricultural ecosystems. It is high time that we came up with these simple, cheap and universal principles and shared them with the maximum number of people. The model of forest and frugal trees is very efficient at the heart of land units. Here is a positive message that reconciles cultivators and foresters- trees are no longer to be considered a handicap but an opportunity, considering all goods and services that they give in return.

Agriculture that causes soil exhaustion all over the world and takes away forest areas could and must be naturally and efficiently inserted into the list of environmental hazards in a grand scale. Agroforestry saves energy; it maximises the process of photosynthesis, which, as a consequence, allows living soil to fix carbon sustainably. Carbon agriculture is at work. The antagonism between agriculture and environment, between productivity and protection, does not need to exist any more. From this point onwards due to trees that improve their milieu, biomass and biodiversity can go hand in hand.

TREES AS A MODEL FOR AN INNOVATIVE AGRICULTURE OF THE FUTURE

Elaborating a high-return and sustainable agriculture, optimising production while preserving natural resources and guaranteeing the viability of exploitations are the challenges of tomorrow's agriculture. Agroforestry is part of the most promising agro-ecological perspectives to take on this challenge. In the context of climate change, the increasing prices of fossil fuel energies, trees, because they produce and protect at the same time, could find their right place in agriculture.

In temperate zones, trees have been eliminated from agriculture due to climates that stabilise fertility and due to the development of input locations and mechanisation. Thus, we are obliged to conclude that, today, it is difficult to envisage a sustainable agriculture without trees. The lessons learnt from traditional practices, research and development, experiments and the implication of cultivators has permitted to optimise high-return and sustainable Agroforestry systems that caters to the agronomic, social and environmental issues of this new prominent kind of agriculture.



Today, it is possible to switch to an optimised and high-return agriculture at the lowest cost. This means that this type of agriculture can guarantee significant revenues and biomass production while being environment-friendly and beneficial for the society.



From INRA¹, IRSTEA² (eg. Cemagref), CIRAD³, IRD⁴, World Agroforestry Center (ICRAF) to the SAFE⁵ programme that reunited European researchers, numerous organisations have been inclined towards the potentials of Agroforestry in all areas of the globe for a long time.

IMPROVE PRODUCTIVITY OF PARCELS

Several decades of studies have permitted us to demonstrate the benefits of the productivity due to the combination of trees and crops on the same land. Thus, the management of an experimental parcel from plantation to harvest demonstrated that a parcel of 100 hectares produced as much biomass (wood and agricultural products) as a parcel of 136 hectares, where cultivation would have been separately done, resulting in 36% of profit (INRA).

REGENERATE FERTILITY AND BIODIVERSITY IN SITU

Thanks to the trees, an ecological continuity is created over an entire territory, and both animal (auxiliary of crops, bees, preys, etc.) and vegetal populations that once disappeared with the simplification of landscapes are resituated.

For all types of agriculture and all scales, the regeneration of fertile and living soil through a symbiosis between trees and soil-covers favours the reduction of the use of input locations and gives numerous ecological services. Besides, the UN and the FAO report in the Millenium Ecosystems Assessment services given by the association trees/seedlings under canopy, supply services (food, wood, bio-chemical products, etc.), of regulation of climate, of sicknesses, of water and of pollination and also cultural (eco-tourism, heritage, educational aspect, etc.).

OPTIMISE ENVIRONMENTAL RESOURCES AND PROTECT CROPS AND ANIMALS

These benefits of productivity are explained by the presence of trees. In this context, we are concerned with agro-ecological intensification, which is not based on input locations, phytosanitary products or mechanisation but on better utilisation of environmental resources (water, light, mineral, etc.). Indeed, due to effects of competition and/or facilitation, trees and crops create a system where one complements the other. For example, trees absorb water from beneath layers of soil and transport it to the top, putting it at the disposal of crops. The creation of a micro-climate on the crops or on calibrated watershed not only protects the crops and livestock from heat waves but also helps us fight against drought. In a situation where the stagnation of vast cultivation output is worrying, trees are becoming an efficient tool that allows us to avoid climactic accidents that are responsible for this stagnation, especially during spring.



QUANTITY AND QUALITY OF WATER

A recent study (Agroof, INRA, Contrat Agence de l'eau Rhone Méditerranée Corse) has permanently succeeded in demonstrating the capacity of detoxification of trees. As real filters, trees are able to limit a significant part of leaching of nitrates and, thus, participate in limiting the pollution of water-tables. This function of trees is particularly interesting in the management of the zones that are captors

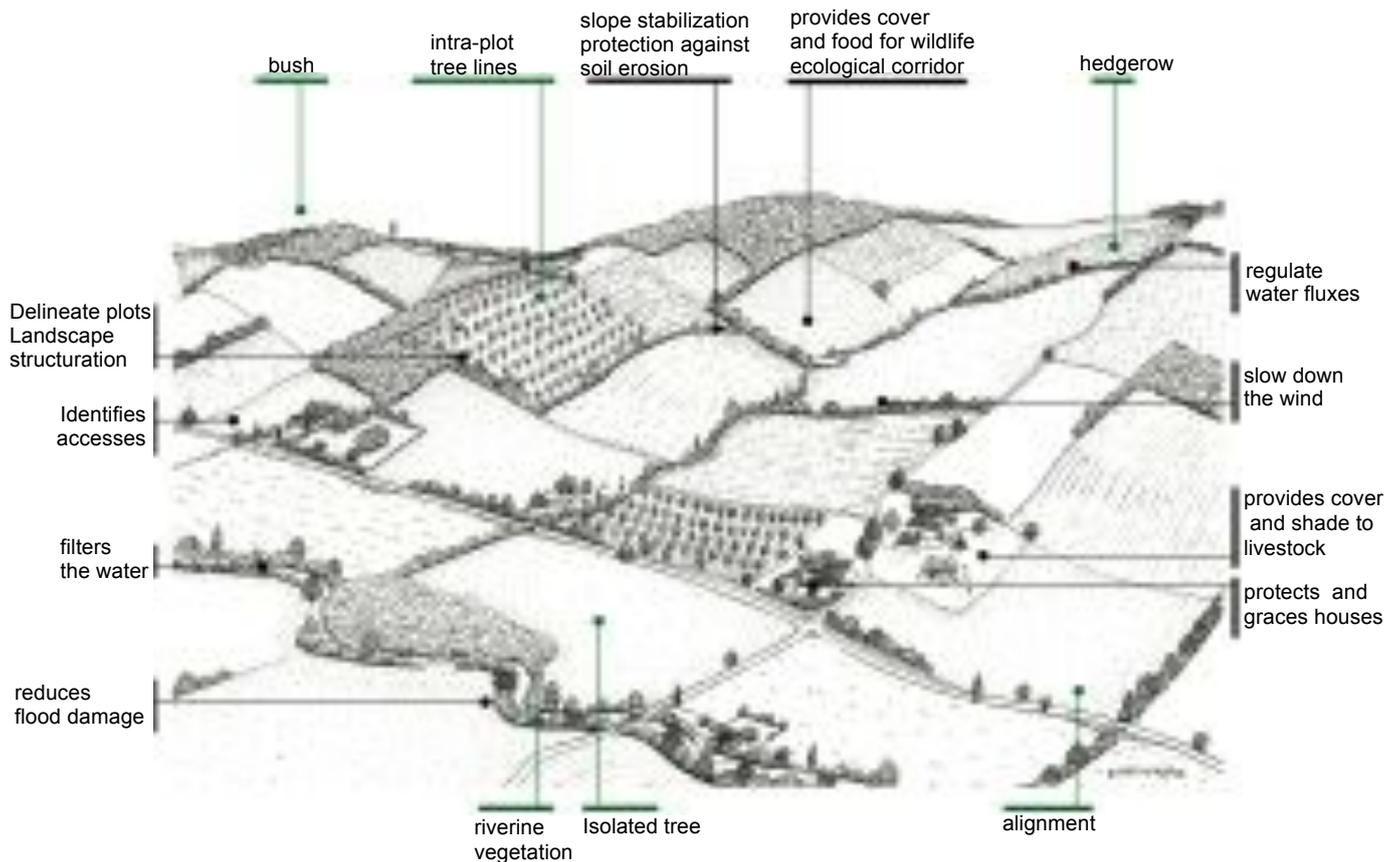
Moreover, trees lead to the increment of useful water reserves by tapping into the flow of water on the surface and underground, limiting evaporation.



STOCKING CARBON TO FIGHT AGAINST CLIMATE CHANGE

Trees are real carbon sinks. It allows us not only to abate the adverse effects of climate change but also to participate in the replenishment of soil with carbon.

Agroforestry: a broadscale answer to territories issues



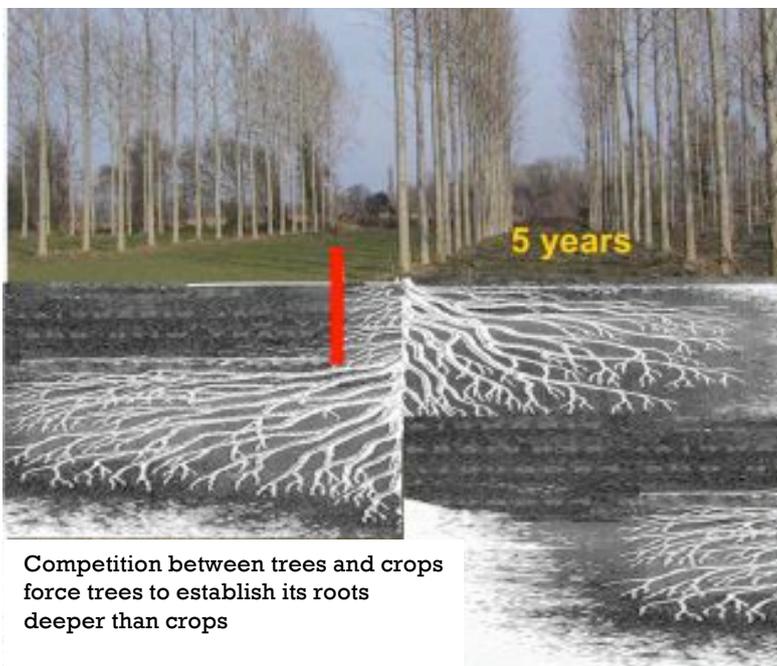
TREES FOR ALL

On the one hand, the advantages of agroforestry need no longer be demonstrated. The reports are multiplying and the results are speaking for themselves (carbon reports of MAAPRAT 2009, MEDDTL's National Climate Change Adaption Plan, PNUE's report of June 2009, CESE's report on biodiversity, etc.). The minds, on the other hand, still need to be set free. Now, the time has come to act and to erase blindly accepted ideas.

Agroforestry is not the only solution. There are numerous other techniques of the same nature associated with it which are putting in place permanent vegetation covers and direct seeding under permanent vegetation cover, simplified agricultural techniques etc.. There isn't just one form of Agroforestry but many, which lays out to all scales, from parcels to calibrated watersheds. Therefore, by being at the heart of management projects that caters to the public interest, it satisfies the needs of the farmers and of the mass.

AGROFORESTRY

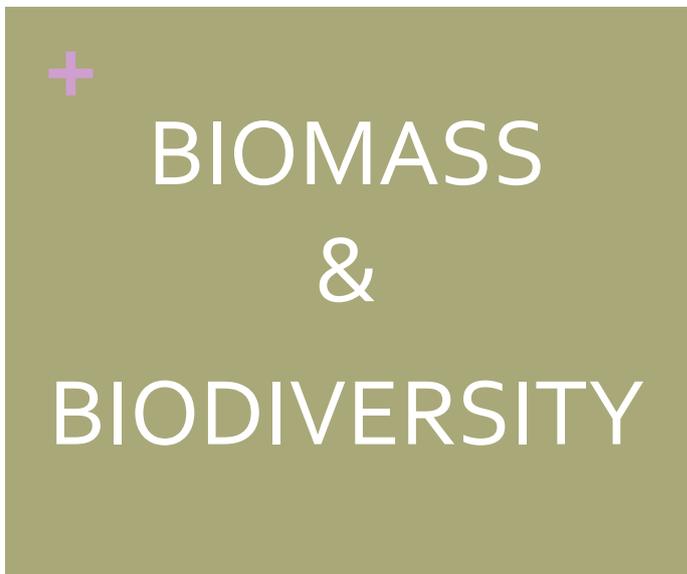
FORESTRY



- 1 Institut National de Recherche Agronomique
- 2 Institut national de Recherche en Sciences et Technologies pour l'Environnement et l'Agriculture
- 3 Centre de coopération Internationale en Recherche Agronomique pour le Développement
- 4 Institut de Recherche pour le Développement
- 5 Silvoarable Agroforestry For Europe



© Geneviève Michon



THE FRENCH AGROFORESTRY ASSOCIATION

The French Agroforestry Association founded in 2007 at the initiative of Agroforestry experts, benefits today from a real representation of all socio-professional categories associated with agriculture and forestry. A driving force, it has partaken in the creation of the EURAF (European Agroforestry Association) that it continues to support, notably in its efforts to help with the progress of European regulations in favour of Agroforestry.



EURAF EUROpean Agroforestry Federation