

IMPLEMENTING AGRO-FORESTRY SYNTROPIC SYSTEMS IN MOZAMBIQUE

By Facundo Quarantini

In Mozambique the Italian NGO ICEI is being implementing [Agro-Forestry Syntropic Systems](#) with promising successful outcomes. Financially supported by the AICS Italian Agency for Development Cooperation, the initiatives are ongoing since 2016 in the Pebane and, since 2017 in the Mocubela Districts of the Zambesia Province.

The project adopted, for the first time in the country, the principles and methodologies of the Syntropic Agriculture, experimented by the Swiss researcher Ernst Götsch for more than 40 years in Brazil, achieving widely recognized results.



In the [Agenda Gotsch website](#) the Syntropic Agriculture is defined as an agricultural model in which natural processes are translated into agricultural practices in their form, function and dynamics. In Syntropic agriculture the restoration of highly productive ecosystems independent from external resources enables the provision of ecosystem services, with special highlight on the regeneration of soil, the regulation of micro-climate and the enhanced efficiency of the water cycle.



Adapted for the first time in Mozambique by ICEI and then adopted by other NGOs and organizations, these principles and methodologies of Agroforestry Syntropic Systems guarantee their capacity to ensure relevant benefits for both the communities and the environment. In particular, the project promotes three types of Syntropic Agroforestry Systems, with the active participation of local communities organized in Committees.



A Syntropic Agroforestry System in the dunes

A Syntropic Agroforestry System is under implementation in the coastal area of the Pebane District, which is incurring a desertification process generated by high erosion, salinization of soil and groundwater, constant and strong winds.

The System occupies an area of 6,000 square meters, located 80 meters from the sea less. Experiments were carried out to verify the types of species that adapt to this extreme sand dunes marine environment, discarding the species that did not respond well.

Production circles were built for growing vegetables, agro-forestry beds in the shape of a circle measuring 4 meters in diameter and 1.5 meters deep. The white sand of the dunes was covered with straw and fertile soil was added only in the vegetable beds.



In 6,000 square meters, around 1,000 plants and trees are growing today, specifically of the following species: pineapple (2,000 units), cassava (3,500 units), peanuts (large variety), rice, tomato, lettuce, parsnip, Nhemba bean, Soloco bean (Azuki), sunflower, maracuja, lupine, cactus, aloe, coriander, basil. Many tree varieties are growing there (banana, papaya, abogado, orange, lemon, cashew, mango, baobab, sesbania, gliricidia, red and yellow acacia) including many local varieties.



Irrigation is done only in the beds for vegetables and for only some varieties of trees planted with seeds that are still very small. All the plants do not present parasitizes.

Syntropic Fish Farming System

In four villages of the Pebane District 23 pools for fish farming have been implemented; they are surrounded by areas cultivated through an [Agroforestry Soil and Water System](#) able to produce vegetables and fruits throughout the entire year, not only during the rainy seasons. In this Syntropic System the plants grown around the pools take advantage on the water fertilized by the fish's excreta (one of the most powerful fertilizers in agriculture), while the agricultural production is used to feed the fish. The shadow of the trees creates a natural protection for the fish avoiding suffering when the climate presents high temperatures, that reduce their growth. Finally, the Syntropic System implemented around the pools prevents erosion phenomena and increases soil fertility too.

Demonstration Syntropic Agroforestry System

In the external spaces of the ICEI Office in Pebane, characterized by a very degraded soil, a Syntropic Agroforestry System is implemented so that farmers, authorities and all interested parties can appreciate the results of this innovative method of cultivation, in view of its use. In this space, in each square meter an association of different species was planted: peanut, ginger, pineapple, sugar cane, manioc, corn or sesame, quiabo, Boere and Azuki beans. In addition, a row of trees was planted, with different species such as papaya, banana, cashew, mango, coconut, orange, sesbania and gliricidia. After three months of implantation, this consortium of plants has produced 5 different vertical productive layers. At the same time, *Demonstration Fields of Results* are carried out in different communities involved so that farmers can observe and train themselves on how to adapt the ensemble of different species to their individual plots.

Those Agroforestry Syntropic Systems have proved their capacity of producing the following effective benefits:

- Recover depleted areas for productive and environmental purposes regenerating the soils, ensuring their good management and preventing the erosion phenomena;
- Reduce up to 75% the use of water for irrigation and the use of soil for crops;
- Control of pests and diseases of plants thanks to the ecological balance of the system, as an alternative to the use of chemical pesticides;
- Strengthen biodiversity using farming methods that mimic the natural regeneration of forests and by associating agricultural with forest crops;
- Ensure an economic benefit for farmers, through a constant harvest thanks to the different species having different production cycles;
- Ensure a higher quality of products for the population and promote the production of medicinal plants widely used by local communities.

Governmental and local authorities of Mozambique involved in the project stated that these methodologies represent a replicable model for the country. In September 2017, representatives of ICEI participated in the Workshop on Syntropic Agriculture conducted by Ernst Götsch at the National Mondlane University in Maputo. The Workshop, organized by Kosmoz, achieved the consistent participation of representatives of civil society organizations,



international cooperation and public authorities, demonstrating the great interest raised in Mozambique by this new approach.

In the following websites an extensive documentation on the principles and methodologies of the Syntropic Agriculture and on the results obtained in its application is available.

To know more

[ICEI sitio web](#)

[SAFs ICEI en Biofund.org.mz sitio web](#)

[SAFs Relatorio Fotografico](#)

[SAFs Conceptos basicos](#)

[Agricultura sintropica en redd.org.mz](#)

[Universidad Mondlane](#)

[Agenda Gotsch sitio web](#)

[Life in Syntropy Video in Youtube](#)

[Life in Syntropy Summary in Youtube](#)

[Da horta à floresta - From garden to forest](#)

[Agrofloresta em Grande Escala - Fazenda da Toca](#)

[Agricultura sintropica en sitiosemente.com](#)

[Agricultura sintropica en cooperafloresta.com](#)

[Sistemas agroflorestais en Youtube](#)

[Agricultura sintropica en oglobo.globo.com](#)

[Agricultura sintropica en otempo.com.br](#)

