Enhancing agroecological transition in Oil Palm Cultivation: Building Innovative Agroforestry Systems in Southeastern Mexico

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Context

Mexico produces palm oil since 1990 and the productive area has reached 100 000 ha in 2020. Mexico imports 70% of the oil palm consumed in the country, and ninety-five per cent of Mexican oil palm production is provided by farmers with less than twenty hectare of cultivated area. The federal government of Mexico promotes the development of agroecological transition, thus the expansion of oil palm cultivation in the country needs to fulfill management practices environmentally friendly.

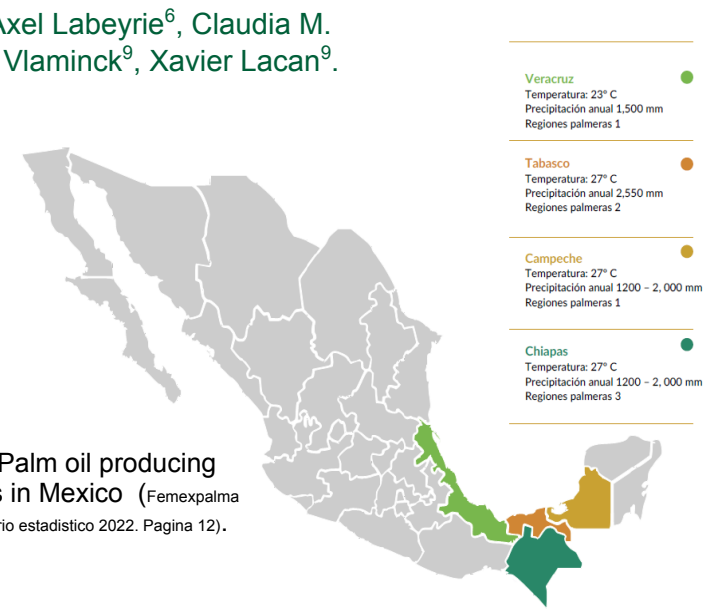


Fig. 1: Palm oil producing regions in Mexico (Femexpalma 2023, Anuario estadistico 2022. Pagina 12).

Methods

The Optipalmex project aimed to support the transition by creating a network of oil palm plantations involving 38 farmers in Campeche and Tabasco (Fig. 1). Supports consisted in:

1. Providing seeds of selected progenies to farmers to implement innovative systems, involving intercroping and agroforestry.
2. Developping a strategic game to understand the system, stakeholders, techniques, impacts, and challenges (Fig 2A).
3. Facilitating the design of innovative production systems by sharing knowledge, defining interests and limits, and identifying opportunities (Fig 2B).
4. Providing technical training and assistance for renewing plantations or converting pastures (Fig 2C).

A

C

B

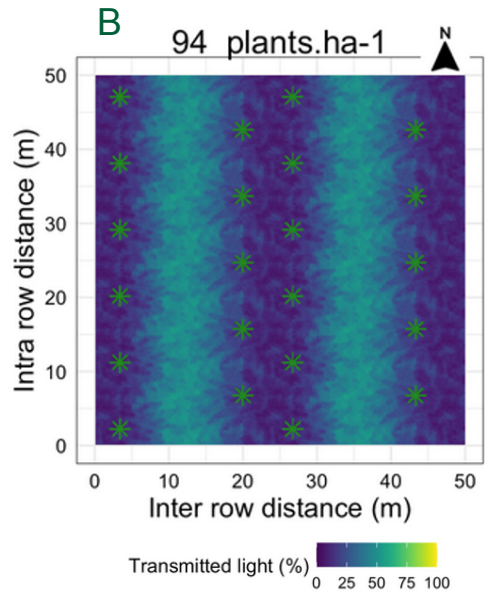
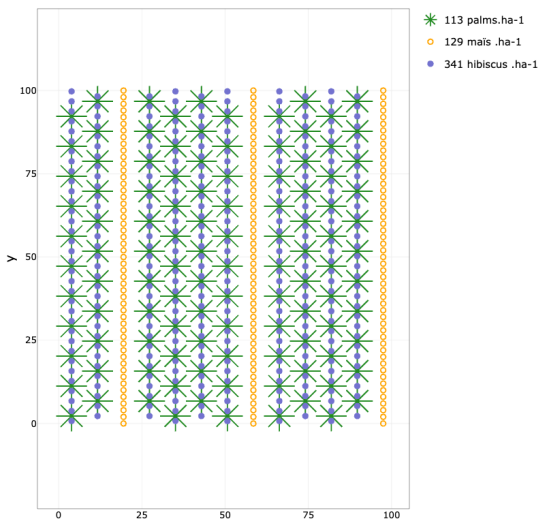


Fig. 2: A) Use of the strategic game to develop innovative system. B) Simulation of light transmiitted for crops in oil palm innovative design. C) Technical training at planting.



Results

From July to October 2024, farmers established 57 experimental plots combining oil palm (unique oil palm genetic material) with various fruit trees (citrus, cacao, bananas) and timber species (acacias, teak, mahogany, cedar) in alternating rows or borders, along with livestock grazing. Some designs are replicated across sites, while certain farmers are testing one or two additional designs alongside the conventional monospecific approach.

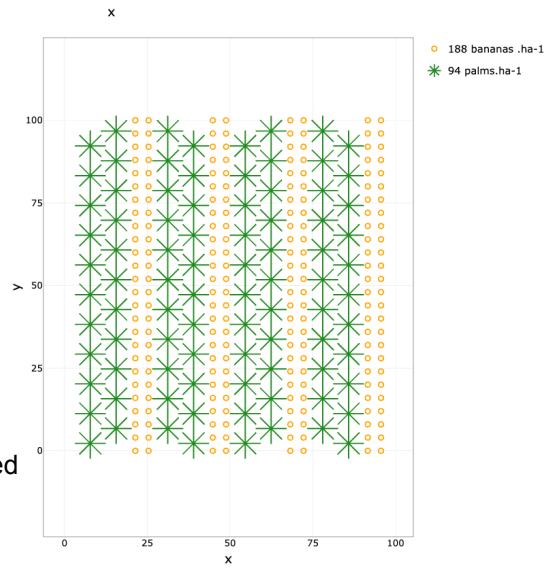


Fig. 3: Two designs implemented in Campeche, where oil plams were associated with various intercrops (picture with schematic representation of the design).

Perspectives

Oil palm performance will be evaluated by recording production in the network plantation. Further ecophysiological measurements will be carried out, including a fine monitoring of climate conditions and setting up specific devices aiming at assessing resources competition among plants within the different designs (light, water and nutrients). Such information will be crucial for better understanding oil palm growth and production in relation to local environmental constraints, and eventually improved the proposed agroforestry designs.

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enhancing sustainable oil palm