

Cultivation of organic avocado in Michoacan, Mexico: a production model of communal territories

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Abstract

For the last twenty years avocado (*Persea americana* Mill.) plantations have exponentially expanded in the forestlands of Central Mexico, due to the increasing global demand and the high profitability, particularly when compared with traditional corn cultivation of forest production. Plantations are concentrated in the mountainous regions of Michoacan state, where 83% of avocado production comes from and where the extension devoted to these plantations have grown from 15,000 has in 1960 to 134,000 has in 2013. At least 40% of this area used to be community pine-oak and cloud forests.

Up to now most of avocado production has followed a scheme based on: monocropping, high use of agrochemicals, high use of water and on the removal of all the vegetation cover from the soil, with high environmental impacts (losses of forests and soils, pollution of water bodies and soils). On the social side this model has also promoted concentration of lands and income and lowering employment.

Production of organic avocado has emerged as a promising model that seeks to lower environmental impacts, forest conservation and respect of natural cycles of water and energy while enabling fair relations among producers and consumers. Profits from organic production are 20% to 40% higher than conventional production and tend to lower the numbers and power of intermediaries of market chains.

We will also discuss the role of community institutions on decisions concerning the different models of avocado production in some communities, where decision-making spaces are representative and democratic it is possibly establishing collectively that avocado production systems transit towards more sustainable models such as organic. For this research will be developed in field the role of institutions of communities in discussion and making collective agreements will be developed.

We will discuss in detail the successful experiences of indigenous communities that have opted for a model of organic production and what were the main findings regarding the sustainability of their territories.

Background

Problems in the region

The MBBR region has a very special history in terms of rights, institutions and conservation of the territories and forest resources. Most ejidos and communities in the area were legally recognized in the late 1930s —the period of greatest momentum in the agrarian divide in Mexico— acquiring legal rights over lands and forests (Warman, 2001). Since then, the ejidos and communities through their assemblies were constituted as the main institutions of decision making in the area, in the late 1970s a second process of land distribution took place, providing land to constituted ejidos Mainly by people who migrated to the area in the previous decades (Barton y Merino, 2004).

Communities and ejidos in the region have historically faced a series of restrictions on their rights, the first of which was the imposition of a forest ban between the 1950s and the 1980s (Brenner, 2010). It is important to mention that this forest closure did not result in the effective suspension of timber harvesting, in the region there were important forest industries that during those years continued to operate, maintaining an increasing demand for raw material. Due to the restrictions imposed by the closure, the use of forest resources became an illegal activity, which continued for many decades(Merino y Hernandez, 2004).

In 1986, the creation of the Monarch Butterfly Biosphere Reserve with 16,000 ha was decreed, bringing with it a second period of restrictions that directly affected the rights of the communities. For the year 2000, the Monarch Butterfly Biosphere Reserve was established, extending the extension to 56,259 ha (Merino y Hernandez, 2004)

While the ownership of the communities was formally maintained, in fact, communities in the region drastically lost usage rights in areas corresponding to core areas (13,551 ha), and partially in buffer zones (42,708 ha).

Institutions and rights

The forests of the communities of the Monarch region are commons in a double sense: they are collective property and have characteristics that are difficult to exclude from potential users and highly subtractable¹ (Ostrom et al., 2009; Ostrom, 2009). In the MBBR these conditions are exacerbated given the conditions of poverty and high population density resulting in the constant presence of illegal loggers. In this context, community rights and the strength of community institutions are highly relevant, since forest protection requires high participation and sustainable forest management requires a high level of viable and legitimate regulation based on consensus between the different users of the resources (Merino Pérez, 2014).

Organizational procedures depend to a large extent on the trust and networks of collaboration (social capital) that exist in communities (Ostrom et al., 2009). Due to the history of policies that have undermined community rights, criminalizing traditional forest uses and ignoring community authorities, trust is a scarce commodity in the region (Merino y Hernandez, 2004).

The social conditions in the MBBR area are very similar to those prevailing in most rural areas of Mexico, where poverty and extreme poverty predominate (Cisneros Morales, 2005).

¹ Because they are finite resources

One of the main problems facing the majority of communities today is that their community institutions have lost representation within communities.

Description of the region

The indigenous community of *Carpinteros*, whose existence dates back to the 17th century, has 858 ha, of which 26% (222 ha) are in the core area of the MBBR and 29% (250 ha) in the buffer zone (INEGI, 2000; CONANP, 2014). The population of *Carpinteros* is 1,200 inhabitants, of which only 240 are comuneros² (RAN, 2017). For more than 28 years this community has been involved in restoration and conservation of its natural resources. The Assembly of *Carpinteros* is one of the largest organization and representation in the region, meetings are characterized by a high participation, due to its formality and respect for the guidelines to take agreements and follow them (E. Serrano, personal communication, 20 September 2016).

For several years *Carpinteros* comuneros have been developing a study of sustainable management that will allow them to have the authorization of SEMARNAT³ to carry out forest extractions in their forests located in the buffer zone and outside the MBBR (G. Garduño, personal communication, 13 September 2016).

In the community lands, monarch butterflies colonies have been identified and monitored for eight of the last ten years (Vidal et al., 2014).

The Community of *Carpinteros* and Organic Avocado

The case of the community of *Carpinteros* is a very characteristic case in the region. In the mid-nineties of the twentieth century identified the opportunity for economic development offered by avocado cultivation, in terms of comparative with other crops and by the rapid growth in consumption of this fruit nationally and internationally.

² People who participate with voice and vote in community decisions

³ Federal agency in charge of environmental regulation in Mexico

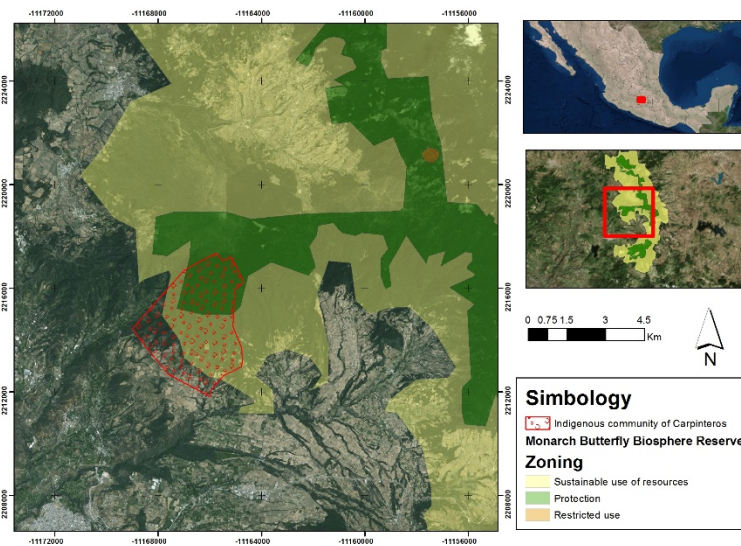


Figure 1. Map of the indigenous community of carpenters. It includes the polygon of the monarch butterfly biosphere reserve

In the community, there are three types of communal lands: "monte"⁴ that represents 65% of the community's surface; "habitacional"⁵ with less than 5%; and "agrícola"⁶ with 30% of the area and where maize and beans have traditionally been cultivated.

In the community, there has been the phenomenon of replacing traditional crops with avocado orchards, mostly with organic practices. This same process has happened in many other communities in the region, however, the importance of this case is due to the fact that the community assembly agreed that the establishment of avocado crops should be exclusively on "agrícola" land and strictly It is forbidden to change land use from "monte" lands to avocado orchards. This decision has been important in ensuring that the forest areas and the environmental services they provide are preserved and improved. The forest conservation and sustainable use of forest resources has been achieved through PRISMA (2016), this community has experienced a deforestation rate of only 0.13% between 2000 and 2012.

⁴ Forest land with different degrees of conservation, in this category are the zones part of the core area of the MBBR.

⁵ Land where human settlements are located.

⁶ Land that has been dedicated to agriculture and that although they are communal, are worked and have a de facto private property status.

The economic benefits that the community has obtained from the cultivation of avocado have been reflected in a development in the quality of life of the population and have presented very interesting social processes, such as the return of migrants who had left the community for lack of opportunities to other Mexican cities and the United States, as well as a strengthening of the Assembly as the institution that governs and determines the uses of the territory.

Thanks to the bonanza obtained by the cultivation and commercialization of avocado, the forest lands have been maintained with a zero deforestation and have developed a Forest Program through which they can legally take advantage of the volumes of wood authorized by the federal authorities annually, This use is made in forest areas that are in the buffer zone of the MBBR and in those that are not within the reserve, it is worth mentioning that the benefits obtained from the forest use are managed by the community assembly.

It is important to note that only 20% of the population of the community are *comuneros*, so a very high percentage of the population has no rights over communal lands or to make decisions in the assembly, however, the community have made the decision that people who live in the community and do not have communal rights, are those who carry out the activities of protection and forestry, which allows them to obtain economic benefits and are participants in the decisions of the assembly to conserve and take advantage of Sustainable community resources.

Another important feature of the *Carpinteros* case is the fact that most of the avocado production is carried out using organic methods and techniques, which reduces the environmental impacts on the soil, water and the health of the population. In recent years organic avocado trade has increased significantly globally, the market value of organic avocado is 20% higher than that of conventional avocados. Currently, the production of *Carpinteros* is exported in its entirety to European markets.

Conclusions

The positive experience of the *Carpinteros* community shows how, despite the limitations on rights —currently due to those imposed by the MBBR— communities

can improve their quality of life, conserving and using their natural resources sustainably.

Based on the successful decisions and rules that the community assembly has taken, it has strengthened and is now considered one of the most solid and active institutions in the region, it represents an example of the management of communal territories for the benefit of all community.

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