

Emily Ray  
Poudre High School  
Ft. Collins, CO  
Mexico Factor 6: Sustainable Agriculture

## The Lacandon Tribe of Mexico

### *Introduction*

The Lacandon tribe of Mexico is one of the most traditional and reclusive native tribes left in Central America. During the colonization period 400 years ago, the Lacandon avoided most of the conquest by migrating south from the Yucatan Peninsula to the Chiapas rainforest of Mexico (Figure 1) ("A Portrait of the Lacandon People"). They continued their agricultural practices and forest-management techniques developed in the Guatemalan tropical forests (Nations and Nigh). Remarkably, they remained mostly isolated from outside influences until the mid-1940s (Renshaw). Slowly their culture began to change to accommodate modern technologies and beliefs.

However, until the late 20<sup>th</sup> century their lives remained traditional ("Social Life"). In the 1990s, the region had low educational averages and high levels of rural poverty (De Jong).



Figure 1: Chiapas region of southern Mexico  
Source: Conap-Semarnat 2008 in Trench (2008, 613).

Traditional Lacandon family composition and housing patterns changed around 1970 when the widely dispersed settlements migrated to a larger community and were heavily influenced by proselytizing missionaries (Renshaw). Until that point, families lived singly or in small clusters in the jungle territory on their own farms. Each polygamous household was made up of a husband, several wives, children and extended family ("Social Life"). The wives and older female children cared for small children and did household chores such as cleaning and cooking ("Stockwell-Mudd Library"). The husband and older male children would go to the field to care for their crops ("Stockwell-Mudd Library"). Families lived in houses consisting of wood posts supporting a thatched roof with dirt floors and no walls. In addition to their house, families would have several other structures for storage, animal pens, and a god house ("Social Life"). Traveling between family farms took about a day on foot. The household clusters were not permanent units, but changed as young men and women got married and split off to create their own farms and homes ("Social Life").

### *Sustainable agriculture in Lacandon culture*

Today, the Lacandon society is a mix of traditional and modern technologies and subsistence practices. Some members of this tribe earn money through the tourist trade and wage labor while others still practice a sustainable form of slash-and-burn agriculture along with hunting and gathering ("Social Life"). The fields resulting from the slash-and-burn system are called milpa. Like other slash-and-burn systems, the Lacandon cut down the trees and vegetation to clear a particular part of the forest, and then burn the dried cuttings to clear the field for crops ("Social Life"). Trees are felled for fields in the spring from February through April, and the burning and planting are done as soon as the fields are dry enough ("Stockwell-Mudd Library"). The family plants and harvests the milpa for two to five years, or until the

soil has been depleted of nutrients. Then they plant the area with tree crops and allow it to regrow with natural forest vegetation (Nations and Nigh). After the trees and vegetation reach a height of about four to seven meters (which usually happens within five to seven years) they clear and burn the area for another round of cultivation (Nations and Nigh). After the planting has exhausted the soil, the family allows it to regenerate into mature secondary forest, which takes about 20 years (Nations and Nigh). New milpas are frequently extensions of existing milpas rather than entirely new plots. The farmer fells primary forest on one edge of his current milpa and fallows and equal section on the opposite edge (Nations and Nigh). He plants tree crops in the fallowed area, which have many uses including fruit, rubber, and cordage as those trees mature. When that area reaches the required heights of regrowth, it can be cleared and used again. This allows the farmer to retain some fields in cultivation at all times (Nations and Nigh).

The crops planted in these milpas, include corn, beans, squash, onions, lemon grass, tomatoes, chili, garlic, yams, avocado, and sometimes tobacco (“Social Life”). Summer corn, ready in September, is harvested by the end of the year in time for the crop of winter corn (“Stockwell-Mudd Library”). Lacandon women plant and harvest the other secondary foods in the root, tree, grain, and vegetable families during the rainy season from May to October (Nations and Nigh). Regardless of when the crops are planted and harvested, they are scattered throughout the field, instead of clustered by species. Corn is planted every 1.5 meters throughout the field, and all other crops are spaced between the hills of corn (Nations and Nigh). By spreading out the crops in this manner, the plants use the available space, water, and nutrients more efficiently, thereby allowing the same crops to be grown on one piece of ground for longer instead of having a crop rotation system (Nations and Nigh). This system is good for providing diverse crops throughout the year, but maintaining it is more difficult and requires more labor and skill than a monoculture would need. It also necessitates a thorough knowledge of compatible crops, planting schedules and other management techniques (Nations and Nigh).

In addition to increased food production, during the first two years of cultivation, milpas cut directly from forest do not require much weeding. This is especially important if the farmer wants to plant tobacco, a crop that requires a weed free area (Nations and Nigh). However, after the regrowth period, weeds sprout much more easily and intensive weeding is needed as crops grow (Nations and Nigh). Fire is also used as a cultivation tool between corn crops in the same milpa. Plant debris and weeds are collected in piles then after the harvest are burned with the dried corn stalks, thereby recycling unharvested nutrients into the soil (Nations and Nigh). Some farmers, especially older ones, find it more difficult to fell primary forest, so they plant the same milpa for four to five consecutive years. Although weeds do become a problem with these longer growing periods, the farmers manage by clearing weeds when they sprout.

In addition to weeds, animal pests are a problem for all milpas. However, the Lacandon people often plan for some of their harvest to be lost to wild mammals, which can actually benefit the family as the animals can be caught and provide necessary protein (Nations and Nigh). In addition to catching mammals in their fields, the Lacandones are also hunters and gatherers. A variety of wild game including monkeys, rabbits, deer, squirrels and birds can be available to hunters (“Social Life”). Despite the traditional practice of only killing what their families can eat, game has become more scarce, as the forest becomes depleted (“Stockwell-Mudd Library”). The Lacandon also harvest wild cacao, thatch, plant fibers, clay, and wood for beams, dugout canoes, and bows and arrows (“Social Life”). The arrows are tipped with flint and chert, which can also be made into hammer stones. All of these products can be traded for metal tools such as machetes, guns, iron axes and pots and pans (“Social Life”).

### *Major changes in the Lacandon society*

Although the Lacandon culture remained untouched for much longer than other Central and South American tribes, since 1979 when a road was constructed through the Lacandon jungle, they have been more heavily influenced by the outside world (McGee and González). Even now, the Lacandon culture, one of the last to preserve their ancient customs and language, is being slowly diluted by modern influences such as technology, media, and missionaries ("A Portrait of the Lacandon People"). Between deforestation, missionary activities, and immigration over the last century, the Lacandon began moving from their remote family farms to larger villages ("Social Life"). The buildings in these villages now have concrete floors and walls, with thatched or tin roofs as opposed to the traditional dirt floored dwellings ("Social Life"). In addition to habitation changes, the family composition has also been influenced. Today, many Lacandon have converted to Christianity and become monogamous ("Social Life"). As many families live in more concentrated settlements, their land-management techniques have changed as well. In recent years game populations have decreased, and outside agencies now encourage dependence on processed food (Nations and Nigh). The expansion of big tobacco industries in Mexico has decreased the demand for local tobacco, which was an important source of income for many Lacandones (Nations and Nigh). As a result of this as well as the concentration of settlements, some Lacandon have abandoned their farms altogether and have sold their land to lumber companies. Instead of farming, they have started working as paid laborers, forest guides, and peddlers of handmade goods in the tourist trade ("Social Life"). More recently, the Lacandon have been affected by the booming of worldwide coffee trade, and have been approached by fair trade coffee cooperatives ("Social Life").

The tribe is facing many pressures from governmental, religious, and commercial programs which seek to "improve" conditions and exploit resources within their territory (Nations and Nigh). The Lacandon culture is threatened by the advance of modern practices as every day fewer of the Lacandones are performing their ancestral rituals and keeping up their unique farming practices. Although this has benefitted their economy, perhaps the real question should be, not what the Lacandon can learn from us, but what we can learn from them.

The Lacandon milpa system is a very good example of sustainable agriculture, which directly relates to the Mexico Millennium Development Goal #7, "Ensuring environmental sustainability" (Instituto Nacional de Estadística y Geografía). Unfortunately it does take lots of time, energy, and knowledge to maintain this information. Around the age of 5, children in more traditional households begin to help their parents in the milpa (Falkowski et al.). They are educated in traditional farming practices through direct instruction and through experience. Children are given a variety of tasks and also accompany their parents on hunting and gathering trips in the forest (Falkowski et al.). This way they have hands on experience with many different parts of the farming process. By age 10 they start to make significant contribution to the work required to maintain the milpa system (Falkowski et al.). By their mid-twenties they usually get married and begin their own farm, always continuing to learn on the job (Falkowski et al.). The ability to manage complex ecosystems such as the milpa is more difficult than simply following directions. Through constant hands on experience, children learn traditional techniques but more than that, they gain the detailed understanding of the forest and milpa ecosystems needed to effectively respond to the nuanced environmental changes, especially those that may occur during climate change (Falkowski et al.). All of this makes up their Traditional Ecological Knowledge or TEK. TEK obviously plays a large part in how the milpas are managed, and how the family can produce/gather the food and supplies it needs to survive. However, as the modern world encroaches upon the Lacandon society and people begin to abandon their traditional agriculture, TEK is lost. The problem then becomes, how can the society maintain its traditional knowledge of the forest and farming techniques that are less harmful to the environment, and also accept modern way of life? The economic prosperity brought on by a combination of farming and tourist trade has allowed Lacandon vendors to buy televisions and satellite dishes that

show them the world beyond their small community. This and other modern conveniences have led to loss of culture, religion, and agriculture practices (McGee and Gonzaléz).

In more traditional Lacandon polygamous households, the women do the housework and cooking while the men take care of the milpa. However, as the Lacandon become more modernized, these traditional roles have shifted. Some women in the Lacandon Maya community have expanded their roles to include some customary male activities (McGee and Gonzaléz). Today, many households focus on making arts and crafts for the tourist trade. As men are the main vendors of Lacandon crafts, many of them either split their time between farming responsibilities and crafts, or abandon farming altogether (McGee and Gonzaléz). With men participating less in the traditional farming practices, some women have taken up the responsibility of caring for the milpa. This is especially the case if there is no capable male in the family and the women run the household on their own. Even if there is a man in the family, as many households have abandoned farming altogether, women have been left free to help produce traditionally male crafts such as bows and arrows for the tourist trade (McGee and Gonzaléz). Also, with the onset of more modern conveniences such as grocery stores and electricity, women have not had to spend as much time preparing food or doing household chores like carrying water and washing clothes. After children grow up, older women have even more time on their hands (McGee and Gonzaléz).

Another factor that participates in the shift of gender roles is the loss of traditional religion. In addition to abandoning farming practices, young men have also neglected to continue their religion (McGee and Gonzaléz). Since the religion has been solely administered by men, when women are in charge of their own households, the traditional religion is not practiced (McGee and Gonzaléz). This contributes significantly to changing gender roles as well as a loss of traditional culture. So modernization has led to a loss of religion and traditional culture, but has also allowed women to overstep their traditional gender roles.

#### *Modernization of Lacandon societies*

If just the sustainable agriculture piece of the issue is considered, the trends are worsening. The knowledge of sustainable traditional milpa farming is being lost as more people are abandoning their farms and moving to villages to become part of the tourist trade. However, if the entire economy of the Lacandon people is considered, the onset of tourist trades in combination with farming has actually caused the Lacandon economy to prosper more than it would if farming was the only source of income and food (McGee and Gonzaléz). This being said, the people who have abandoned farming for souvenir production have a different type of stress than the more traditional households. In the past, the stress of not producing enough food directly correlated to the family's ability to farm. Now, if a family has stopped farming, the threat of not having enough to eat corresponds to not being able to make enough money in the tourist trade to buy food. Studies show that while there are still quite a few traditional farms practicing the sustainable land-management techniques, the young people of the Lacandon are steadily moving away from their roots and towards the production of arts and crafts for tourists (McGee and Gonzaléz).

If the Lacandon community continues along the trend of modernization they will undoubtedly run into new issues that their tribe has not had to worry about before, such as population growth, infrastructure issues, and energy demand. While they were living on their traditional farms, the Lacandon did not have running water, electricity, grocery stores, or many of the modern conveniences we take for granted today. While that meant that their lives were and many still are filled with time consuming, difficult chores just to keep the household running, it also meant that they did not have to worry about the energy and water crises of the modern world. Even those households that are still very traditional face changes to their farming systems including the increased use of subsidies, chemical fertilizers, pesticides, and climate change ("Social Life"). The community also faces a loss of traditional knowledge and cultural respect as the younger people especially welcome modern changes. As the Lacandon community is more influenced by the outside world, they will have to face old and new challenges alike.

While the food security of the Lacandon Maya may not be particularly at risk, the loss of their cultural heritage is much more so. It would be beneficial to the world agriculture community to preserve their sustainable agroforestry techniques. In Central and South America, as well as many other places around the globe, ecosystem degradation and poverty are linked (Diemont and Martin). However, projects to conserve and restore the environment must also address the subsistence needs of the people. TEK in Mesoamerican tribes such as the Lacandon, offers ways to farm and protect the environment at the same time (Diemont and Martin). As population size increases, the struggle for limited resources continues to degrade the already threatened environment and cause conflict among people. Studies have found that agroforested areas support a similar diversity of mammals and birds as pure forest areas (Diemont and Martin). This contributes to the idea that TEK and sustainable agroforestry are viable ways to maintain environmental health and as well as human health. The Lacandon system is an ideal example of this sustainable agriculture practice. They traditionally produce for their families' needs while designing their system to do as little damage to the environment as possible. They manage a variety of different species to slow soil degradation and preserve the natural wildlife. But though they do manage some crops during fallow, it is clear that "human design is supplementary rather than primary" (Diemont and Martin, 256). This system of "ecological engineering" is designed for the benefit of both humans and the environment (Diemont and Martin, 256). It could be a model for farming systems in other parts of the world with the similar conflict of preserving the environment while providing for the needs of the people.

I think there should be a partnership between an organization such as an international research agency or a non-governmental civic organization that can help the Lacandon people record their valuable techniques of sustainable farming and culture. This could be in the form of an enhanced version of the CIES/\*Consortium program of the 1990s (De Jong). I suggest that members of the outside organization talk to the people of the tribe and find ways to record their knowledge. It would be even more beneficial if a few Lacandon people who have ties to the community and to the culture were sponsored through a higher education system and could then come back to the community to work as intermediaries between the Lacandon and the scientists. It is important that the tribe not feel like the outside organization is there to exploit their knowledge and threaten their way of life. It must be very clear that this is a partnership for the benefit of both parties. If there were local people with higher education and world view as well as traditional knowledge, they could be sure that their own culture and TEK is preserved. That way the TEK and culture is not lost, but the community can continue to modernize as they see fit. The outside organization could then pass on some of the techniques they learned from the Lacandon to other communities who are interested in a sustainable subsistence farming method. Ideally, the organization could become less and less involved until the program is run completely by the community and can foster historical and cultural education for the community. It would take some time and effort on all parts but I think it would be worth it to preserve this unique culture and use some of their farming techniques to benefit other communities around the world.

In addition to protecting their culture, the Lacandon could scale up some projects to help protect their surrounding environment and participate in some of the conservation efforts present in southern Mexico. The Lacandon already host seven protected natural areas and five communal reserves and have been players in the consolidation of environmental conservation policies (Calleros-Rodríguez). They partner with environmental agencies, but struggle to "achieve direct access to the budgets that are allocated for biodiversity conservation goals and to negotiate greater involvement in the management of the protected areas" (Calleros-Rodríguez, 144). They have appealed to international donors, especially the World Bank to solve some of the budget issues, but these projects could be scaled up (Calleros-Rodríguez). With more resources and government cooperation, the Lacandon would be more able to have local communities be the managers of their socioeconomic development and conservation of their natural resources (Calleros-Rodríguez).

## *Conclusion*

With cooperation between the Lacandon community and other organizations it is possible to improve the environmental conditions of the jungles of Central America, as well as preserve a unique culture. It is to the benefit of the Lacandones as well as other organizations and communities to record a version of sustainable slash-and-burn agroforestry because these techniques could be applied to other places in need of a way to protect the natural environment and also farm enough food to feed a family. While all of the TEK of the Lacandon people might not be useful in different scenarios, the basic techniques of farming as well as the idea of people being stewards to the land are useful. If a partnership is formed between the Lacandon and another organization, the priceless culture of the Lacandon could be recorded and used even as the Lacandones are becoming more modernized. The Lacandon would be an ideal culture on which to try a partnership like this because they have been untouched for so long and there are still households and villages practicing the same subsistence culture that they have been perfecting for hundreds of years. It would be easier to develop methods for recording a culture with one that is more pure. If this partnership works well, similar experiments could conceivably be tried to preserve other cultures that are being lost to globalization all over the world. Who knows, perhaps learning the ways of ancient cultures could bring about solutions to modern problems.

## Works cited

- "A Portrait of the Lacandon People." *National Geographic Society Blogs*. N.p., 2015. Web. 24 July 2016. <<http://voices.nationalgeographic.com/2015/01/05/a-portrait-of-the-lacandon-people/>>.
- Calleros-Rodríguez, H. "Land, conflict, and political process: the case of the Lacandon Community, Chiapas, Mexico (1970-2012)". *J. Peasant Studies* 41.1 (2014): 127-155. Print.
- De Jong, B.H.J. "An outline of the research and education program of CIES\*/Consortium". *Agroforestry Systems* 28 (1994): 85-91. Print.
- Diemont, S.A.W., Martin, J.F. "Lacandon Maya ecosystem management: Sustainable design for subsistence and environmental restoration". *Ecological Applications* 19.1 (2009): 254-266. Print.
- Falkowski, T.B., Martinez-Bautista, I, Diemont, S.A.W. "How valuable could traditional ecological knowledge education be for a resource-limited future?: An emergy evaluation in two Mexican villages". *Ecological Modelling* 300 (2015): 40-49. Print.
- Instituto Nacional de Estadística y Geografía. "Millennium development goals in Mexico. Progress report 2013". (2013) 24 July 2016. <[www.inegi.org.mx](http://www.inegi.org.mx)>.
- McGee, R.J., González B. "Economics, women, and work in the Lacandon jungle". *Frontiers: A journal of women studies*. 20.2 (1999): 175-189. Print.
- Nations, J.D., Nigh, R.B. The Evolutionary Potential of Lacandon Maya Sustained-Yield Tropical Forest Agriculture. *Journal of Anthropological Research* 36.1 (1980): 1-30. Print.
- Renshaw, Daniel. "The Death of Chan K'in." *Cultural Survival*. Cultural Survival, Fall 1998. Web. 24 July 2016. <<https://www.culturalsurvival.org/publications/cultural-survival-quarterly/mexico/death-chan-kin>>.
- "Social Life." *Lacandon Collection* -. N.p., n.d. Web. 24 July 2016. <<https://www.mpm.edu/research-collections/anthropology/online-collections-research/lacandon-collection/social-life>>
- "Stockwell-Mudd Library." *StockwellMudd Library*. N.p., n.d. Web. 24 July 2016. <<http://campus.albion.edu/library/archives-and-special-collections/exhibits/marvin-j-vann-exhibit/lacandon-indians/>>.
- Trench, T. 2008. "From 'Orphans of the State' to the Comunidad Conservacionista Institucional: The Case of the Lacandón Community, Chiapas". *Identities*, 613

