

Characterization of the subsystem of medicinal plants in the patyotyoty (backyards) in the community of Amado Nervo , Municipality of Yajalón , Chiapas, Mexico.

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Abstract

A study was conducted with the purpose of making a characterization of backyards (*patyotyoty* in the Chol language) in the community of Amado Nervo, located in the municipality of Yajalon, Chiapas, which contemplated an inventory of medicinal plants, their use and management. The study offers a general description of the natural resources of the *patyotyoty*. The medicinal plants were described in greater detail. Information was gathered using a semi-structured interviewing technique, direct observation and a field log. The size of the sample was calculated by simple random sampling (Zar, 1999) in 39 backyards. The results indicated that in the community of Amado Nervo there are 1391 inhabitants and 277 families, including seven midwives who are registered with the IMSS clinic. The inventory indicates that the plants are for use by the families, and there is no commercialization. The most common plants are: basil, wormwood, garlic, marigold, *chanita*, peppermint, fennel, purple maguey, *chaya*, licorice, Mexican wormwood, *yaxbak*, oregano, pennyroyal, rue, lemongrass, aloe and parsley. It was found that in 26% of the *patyotyoty* there were no medicinal plants, and in 61% organic fertilizer was applied for the plants cultivation. It was concluded that the use of homeopathic medicines such as medicinal plants are used frequently to treat ailments and that 39% of the inhabitants used them as an alternative due to the lack of economic resources.

Keywords: Backyard, medicinal plants, Chiapas

Introduction

The purpose of this study is to identify the characteristics of the backyards in the community of Amado Nervo, located in the municipality of Yajalón, Chiapas, - an agro ecosystem with plant and animal production characteristics. The study focuses on the management and use of medicinal plants.

Medicinal plants are a natural resource of great importance which are cultivated in backyards and are used to maintain health in communities. The same backyards also provide from 25% to 75 % of food in Latin America (FAO , 2011) . In this context, the primary focus

of the study was the registration and identification of the diversity of medicinal plants which are known to be preserved in backyards, but are not recorded nor have been identified in detail. Consequently, this study is warranted in light of the aforementioned assumptions. For the purposes of this study, every medicinal plant was identified and recorded together with a description of its use and its role.

Methodology

1. Location of the study area

The community of Amado Nervo is located 25 kilometers from the county seat of Yajalón, Chiapas, $17^{\circ} 13'45.28''$ N latitude and $92^{\circ} 14' 43.30''$ west longitude with respect to the Greenwich meridian.

The town has approximately 1,177 inhabitants according to data from INEGI (*Instituto Nacional de Estadística y Geografía, National Institute of Statistics and Geography*) (2011), who speak the Chol language.

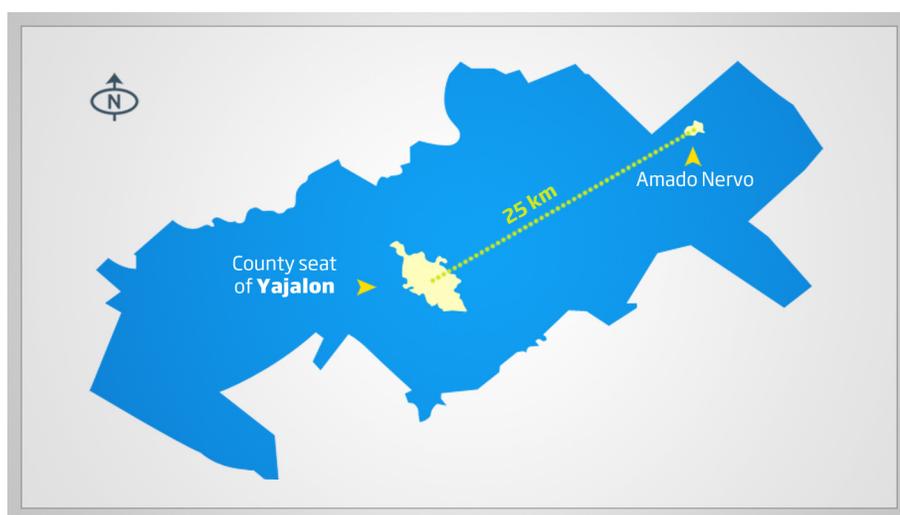


Figure 1. Location of the study area, Amado Nervo, with respect to the county seat of Yajalón.

2. Delimitation of the sample

This study applied 39 interviews aimed at midwives in Amado Nervo, 16 randomly selected people who are not midwives but have back-

yards and grow medicinal plants , and an interview with the family doctor and nurse at the community's IMSS rural clinic.

3. Site visits for data collection

Site visits were performed at randomly selected backyards of the possible 277 that exist in the community (Figure 1). These visits permitted an assessment of the amount and diversity of medicinal plants found at the selected sites.



Figure 2. Panoramic view of the community of Amado Nervo, Municipality of Yajalon, Chiapas.

4 .Inventory of the productive subsystem of medicinal plants.

During the site visits, those responsible for the *patyotyoty* were contacted to make a record of the medicinal plants and their uses. At the same time the sites soil management was registered, as well as the social, cultural and environmental value they assigned to their medicinal plants.

The study was conducted with semi - structured and structured interviews composed of open and closed questions related to the practices that are used with their medicinal plants. The interviews contained the following sections:

- a) General information on the backyard (location, owner profile, shape and size)

b) Technical and economic information (planting , soil type , types of plants , use, available infrastructure, commercialization aspects)

c) Structural and socioeconomic (ethnicity, producer organization, union practices) aspects.

5. Data Analysis

The systematization was conducted through an array of a concentration of the data that were collected, considering the following variables: land type, shape and size; main productive activities done for the care of the medicinal plants and soil; Identification of medicinal plants, their uses, and homeopathic medicine developed from them; identification of other plants and animals that compose the backyard; and finally, commercialization aspects.

In order to analyze the variables that were studied, a data matrix concentration was used which was followed by forming groups. The average, median and range of each variable were obtained.

Results and Discussion

The results of the interviews and observations show that the inhabitants of Amado Nervo define backyards in the Chol language as "*patyotyoty*", which means "behind the house" while there are variations found in other States of the Mexican Republic. For example, in Oaxaca they are called "*traspatio*"(backyards); in San Cristobal de las Casas "*sitios*"(sites) ; in Tabasco "*patio*"; in the Yucatan "*solar*"; in Tlaxcala and Puebla it is called the "family garden" and in part of Michoacán they call it an orchard. They also have an assigned name in the original languages of Chiapas. For example, for Tsotsiles is it called "*patna*" , in Tzeltal it is *patna* or *amak'* , in Chol it is *chili 'b*, and for the Zoques of Pichucalco it is "*angojmo*" according to the variants that exist in each community (Chi Quej , 2009) .



Figure 3. Organization of the *patyotyoty* with diverse medicinal plants and other vegetables in the community of Amado Nervo, municipality of Yajalon, Chiapas.

The *patyotyoty* in Amado Nervo are defined areas located behind the house with subsystems based on vegetables, fruits, medicinal plants and useful animals, as a way to save money and for consumption by the household as mentioned by the FAO(2011).

According to the information documented in this community, 90% of the backyards are rectangular in shape , but not all of the identified subsystems have the same location adjacent to the houses within the plot of land (Figure 2) . According Gliessmann and Somarriba (1981) , home gardens have two notable characteristics : the shape and function ,with shape referred to in terms of the vertical structure . It is observed that the *patyotyoty* is a shaded space, which determines the management and certain combinations that characterize its use. It also depends on the season of the year which determines plant and animal diversity (Barrantes , 1989) .

Within the inventory which was made in the *patyotyoty*, the most common medicinal plants were: basil , wormwood, garlic, marigold , chanita , peppermint, fennel, oyster plant, tree spinach , licorice , Mexican wormwood , yäxbak , oregano , pennyroyal , rue, lemongrass, aloe and parsley (Table 1) . Among those who most frequently used these plants were midwives (Picture 3). Chamomile is used for “baby bulge”, fennel to counteract post-partum pain, and basil to stimulate the mother’s appetite. An interesting fact for its symbolism is the use of incense to avoid the so-called evil eye of the baby , which agrees with what is said by Toledo (2003) about the importance of using other plants or their products for the delivery of a new human being in indigenous communities .

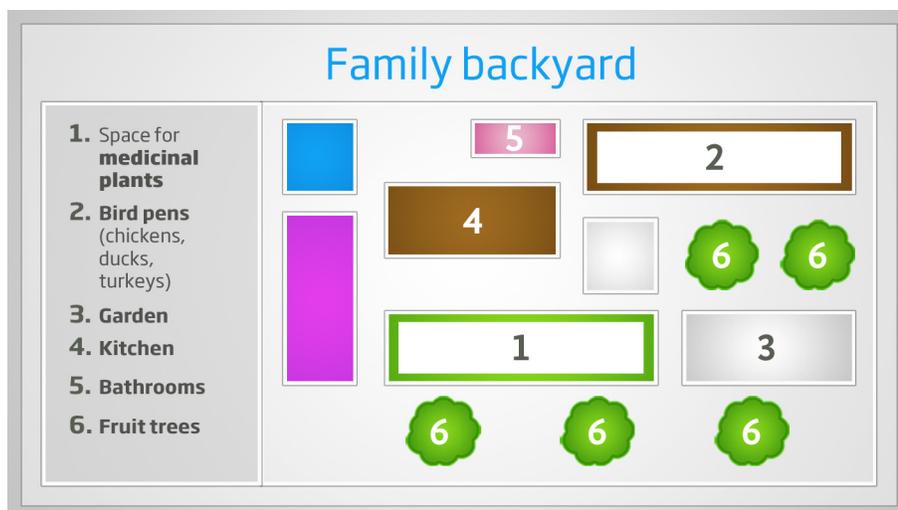


Figure 4. Family backyard area



Figure 5. An interview with Dona Anita, midwife from the community.

The economic importance of patyotyoty is highlighted by the production of fruit, vegetables, herbs, seasonings and meat. Some fruit trees that were identified are orange, lime, banana, mandarin orange; Vegetables such as chayote, silica, and yams; and animals like chickens, pigs, turkeys and ducks which represent an additional contribution to the household economy. According to the FAO (2011), between 25 to 75% of food consumed in Latin America comes from these agroecosystems.

Common name	scientific name	Uses
Basil	Ocimum bacilicum	to cure "fear/being spooked" (espanto) and headache. Midwives use it to stimulate the appetite
Wormwood	Artemisa absinthium	Stomachache
Garlic	Allium sativum	to cure toothache, uric acid, and anti-parasitic
Marigold	Tagetes erecta	for headache, gastritis, conjunctivitis
Chanita	No tiene	for cough
Peppermint	Mentha sativa	for vomiting
Fennel	Foeniculum vulgare miller	for headache, ears and eyes. Pain after giving birth
Oyster plant	Tradescantia spathacea	kidney pain, stomachache, and cough
Tree spinach	Cnidioscolus chayamansa	menstrual cramps
Licorice	Glycyrrhiza glabra	cough
Mexican wormwood	Artemisia mexicana	muscle pain
Yaxbak	No tiene	bone pain
Oregano	Origanum vulgare	ear pain and anti-parasitic
Pennyroyal	Mentha pulegium	babies with fever, "evil eye"
Rue	Ruta chalapensis	fever and stomachache
Lemongrass	Cymbopogon citratus	cough
Aloe	Aloe vera	indigestion, and to heal scars
Epazote	Chenopodium abrosioides	stomach pain and anti-parasitic
Parsley root	Petroselinum crispum	to ease childbirth

Table 1. The most common medicinal plants found in patyotyoty in Amado Nervo, Municipality of Yajalon, Chiapas

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According to Lok (1988) regarding nutrition, community gardens contribute between 15 % and 30 % of the vitamins and proteins and 40% of calories of the household. It is therefore considered that home gardens represent a kind of insurance, so that the rise and fall of prices of various commodities does not affect the family.

Medicinal plants are defined as plants that produce substances that exert a pharmacological action beneficial or detrimental to the living organism.

According to Traverse et al. (2005) , medicinal plants have certain benefits for their use as medication, they are inexpensive and non-toxic , they are used as seasoning in cooking and in cosmological treatments, and are easy to obtain in the home gardens.

This study found that the main uses of the medicinal plants are for cough , stomach ache, headache, muscle aches, "fear" , colds and as an anti-parasitic treatment. . The most effective method of preparation is to boil them in water and prepare combinations with other types of plants. Another method is that part of the plants, such as its leaves or root, are roasted or crushed which releases their healing properties.

Figure 6 shows that the most common medicinal plants in the backyards are basil and rue (35%) while *chanita* , *epazote* , *momo*, parsley , licorice and *k'umaty'e* are the least common.

These data agree with those indicated by the Community Development Centre of Chiapas (2008), which states that the most common wild and cultivated medicinal plants in backyards in Chiapas are: basil, thyme, rosemary, pennyroyal , oregano, aloe, dandelion , parsley and garlic.

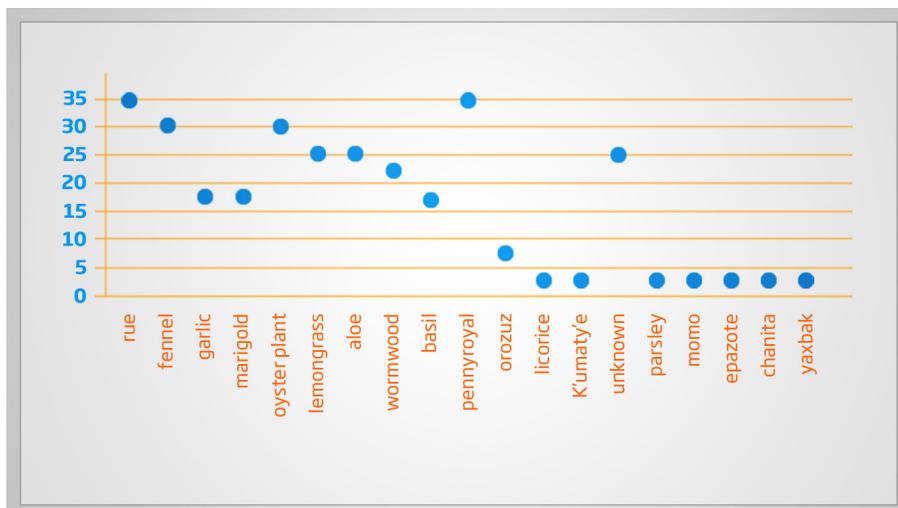


Figure 6. The most common plants in the backyards of Amado Nervo.

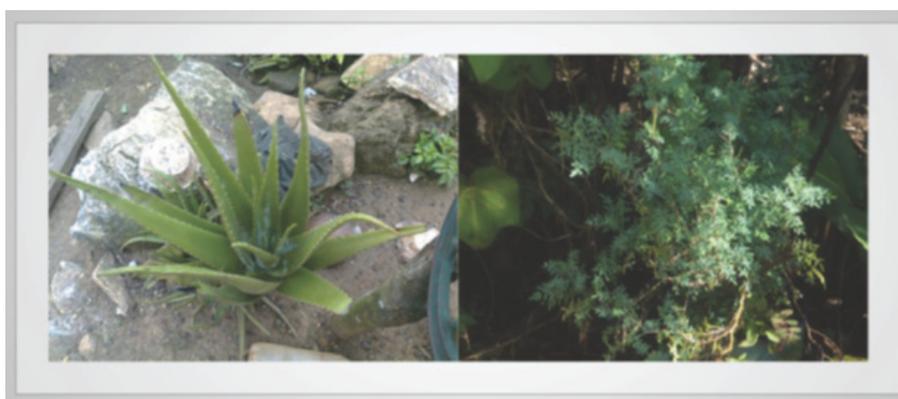


Figure 7. Aloe and Rue. Medicinal plants commonly used in the community of Amado Nervo, municipality of Yajalon, Chiapas.

It was found that 61% of the land in the *patyotyoty* used for cultivating plants is “*tierra negra*” (black earth), due to the use of organic fertilizer such as: coffee husks, animal droppings and fruit rinds. 13% are black and yellow earth. There is a type of red dirt used to make various clay objects. It was also found that 26 % do not cultivate medicinal plants (Figure 2) . According to data from INEGI, the predominant soil type in Yajalón Chiapas are Luvisols and Rendizine which are predominant in humid regions with slopes and valleys of cold and warm climates that produces clay , with a large part of the organic material located above limestone rocks.

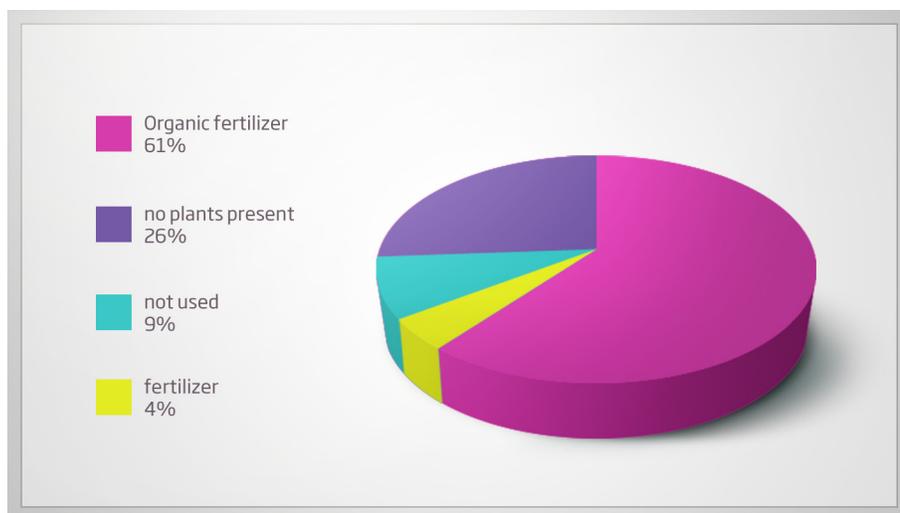


Figure 8. The use of organic fertilizer and chemical fertilizer in the patyotyoty of Amado Nervo.

The results which were observed indicate that 39 % of people use medicinal plants and at the same time use allopathic medicines that help the healing process, while 35 % only use medicinal plants and 26% only allopathic medicines. The most cited reason for not using allopathic medicines is the scarcity of economic resources (Figure 9).

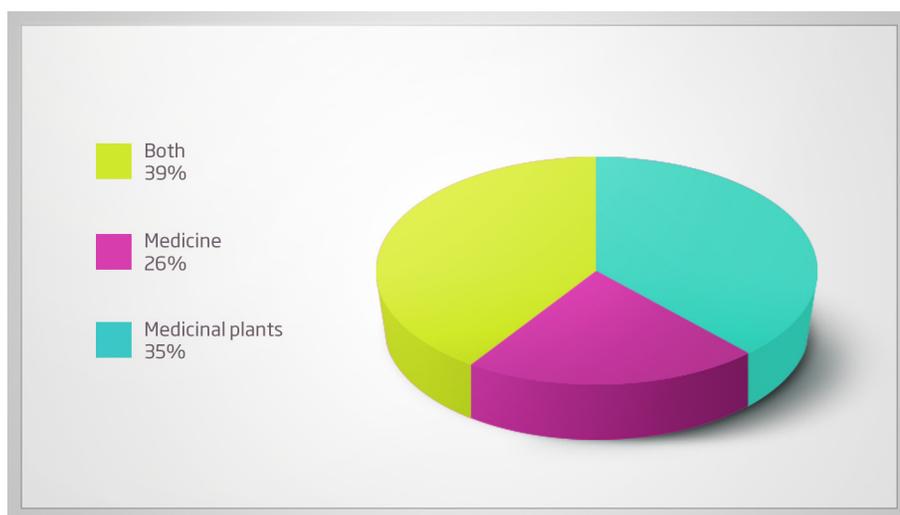


Figure 9. The use of allopathic medicine and medicinal plants by the population of Amado Nervo.

With respect to the care and planting of medicinal plants, it can be observed in Figure 10 that 48% of women are the ones most involved in the cultivation of medicinal plants, from which they obtain what they need for their own consumption or commercialization. 26% mentioned they do not have the plants but somehow use them. 9% are men, and both men and women contribute to the care and cultivation of the plants. 4% are planted by daughters, and 4% did not cultivate the plants as they grow from the seeds of established plants.

The study found that 90% are guided through astronomical indicators for their crops, planting during a full moon (*Chameluj*) which is part of the culture and which has as its secret that they plants will not grow too tall and will have good fruit. During the slash and burn period, 61% of people do not burn their fields. They use all of the organic waste as fertilizer in place of chemical fertilizers.

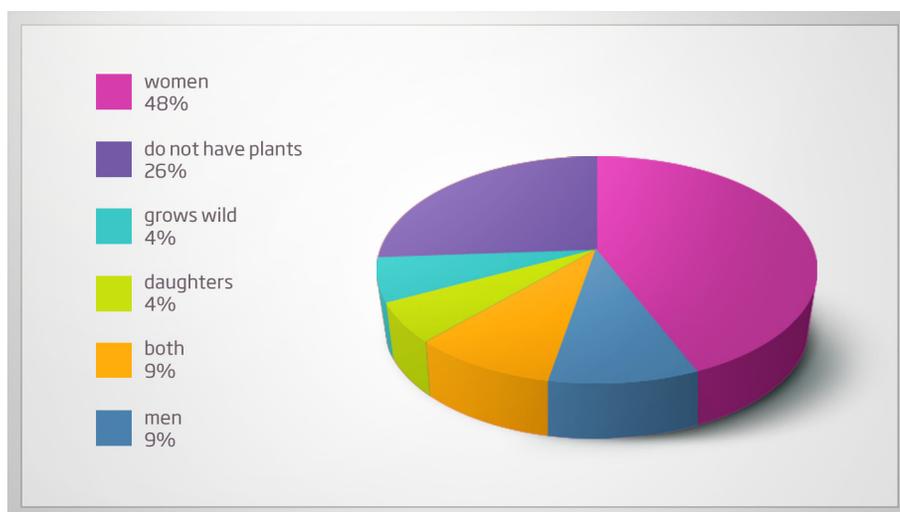


Figure 10. Family involvement in the planting and care of medicinal plants.

It was identified in this community that of the people who are cultivating medicinal plants, 56% do not sell these products as they are for self-consumption while 9% tend to sell the plants if it necessary (Figure 11).

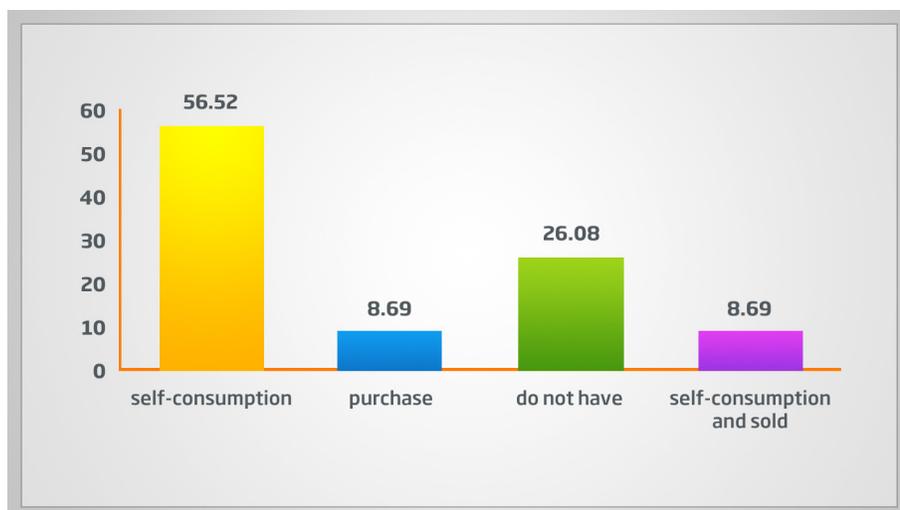


Figure 11. Destination of products of medicinal plants .

26 % do not have medicinal plants but somehow have other types of plants. 9% purchase the medicinal plants somewhere other than Yajalón (Figure 11).

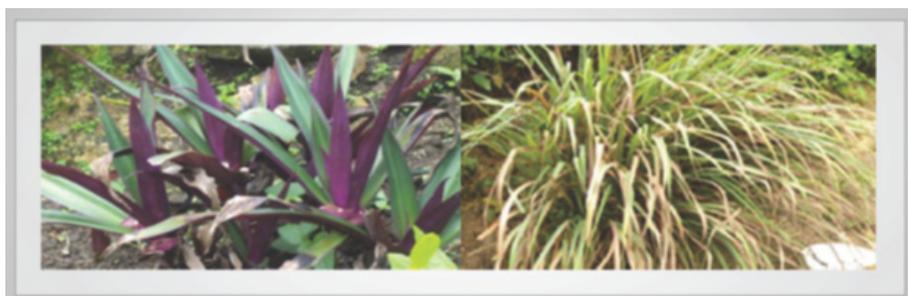


Figure 12. . Purple maguey (oysterplant) and lemongrass, important medicinal plants for families in the community of Amado Nervo.

Conclusions

Cho'l is the language spoken in the community of Amado Nervo. For the inhabitants, the *patyotyoty* is the place where productive economic activities are performed which include various subsystems such as vegetables, animals and the human families that dynamically interact with this space that provides support for sustaining the family economically as well as its integration.

The people of Amado Nervo practice important activities that benefit the environment and themselves, such as the use of natural fertilizers such as decomposed leaves, coffee husks, and poultry excrement which helps maintain fertility and good soil condition and does not damage the soil or plants. They do not burn their cornfields since all corn byproducts are used as compost instead of chemical fertilizers.

The uses of medicinal plants as well as allopathic medicines are of great importance in the community of Amado Nervo, where 36 % use both drugs for rapid improvement of the body when sickness is present. However, the lack of financial resources limits this complementary recovery as many families do not have enough money to buy them. The sale of these plants is negligible, because most people have them in their backyards, which they have for their own use.

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