



The Culture of the Highland Valley of Mexico

II. Ethnological and Ethnobotanical Studies in Some Municipalities of Puebla, Mexico

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Article History

Manuscript No. 78
Received 24th October, 2010
Received in revised form 11th November, 2010
Accepted in final form 19th November, 2010

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Keywords

Ethnic culture, sociology, ethnobotany, biodiversity, plant, animal resources

Abstract

The paper presents an exploratory study of ethnoecology and ethnobotany in some municipalities around the great and dangerous volcano, *Popocatepetl*, Puebla. It discusses the vagaries of climate, social-culture and diversity of biotic resources on which the native communities with diverse ethnic culture are highly dependent for their livelihood. To our knowledge no such studies have been undertaken to understand their ethnic problems, cultures and biodiversity of these localities around the volcano. Concerted research activities need to be directed to understand ethnic culture, social problems and biodiversity of these important, but neglected communities of these regions that succumbed to volcanic disaster of volcano Popo. There is great necessity to preserve the ethnic culture of these neglected communities.

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1. Introduction

A study on the biotic resources of a country like Mexico is one of the important steps to know about the resources in and around us. The exploitation of biotic resources is an inevitable activity and has been practised from the beginning of humanity. Biotic resources mean all the services and benefits which organisms obtain to meet the primary necessity of food, house and dress but according to Escobar (1995), the nature can be named as natural resources. Owing to the increase in population and a great demand for food and other necessities, an overexploitation of natural resources leads to the extinction of many valuable plant and biotic resources. There is a great necessity of implementing the concept of sustainable exploitation and expediting the programs for the protection of biotic resources.

In Mexico, there exist a large number of communities that are to some extent isolated and have little access due to bad conditions. In addition, there exists a great difference in their customs and tradition, well marked by the history of the rural communities. Among the important characteristics that distinguish each population are the family structure, the use of traditional medicine to cure diseases with the help of medicinal plants, traditional festivals and religious beliefs.

The modern societies, however, do not emphasize the importance of these resources, which they utilize in health and industry. In these societies, the biotic resources are utilized in indirect forms so that the products are obtained after industrial processing and in many cases they have no conscious knowledge of the organisms, which are proportioning this service. The communities and rural population utilize these resources in more direct and necessary forms.

I was interested in investigating the way of life, religions, customs, food habits, culture of population and utility of biotic resources for different purposes through my student projects on 'Utilization of biotic resources in high lands of Puebla, Mexico'. I built up four groups (each group consisting of four to six students), advised them to work on four different municipalities in and around the vicinity of Popo. They studied the social conditions, religions, and economic conditions of the inhabitants around and near the vicinity of Popo. I want to mention here that when the students were working in different localities, *Popocatepetl* (Popo) started emitting huge gases and lava. As a result they could not collect many plants for Botanical identification. During the explosions of December, no one was permitted to go near the volcano by the authorities. However, they could collect common names of the plants and information about the social life of the people during the early stages of their investigation.

In order to meet the objectives they interviewed approximately twenty families of the rural communities. The interviews were divided into two parts. In the first part questions were asked on general social aspects of the families, with respect to the number of persons living in each house, the number of children, the activities of family members, etc. In the second part of the investigation, information was obtained on biotic resources utilized by the families to meet their primary necessities. Several visits were made to the communities to hold discussions with the members and at the same time to get the opportunity to know about their way of life. These discussions were made with the older members of the families, the priests of the local church, etc. to better understand some of the traditions and habits and other information necessary for the realization of



this research. Also they observed the native flora and fauna of the region and made a list of species. They had also taken photographs of different aspects of community activities and biotic resources. Herein is presented in brief the salient results of the study in few municipalities of highlands of Puebla in the vicinity of Popocatepetl.

2. Ethnological Study in San Nicolas de los Ranchos, Puebla

(R. K. Maiti, Edna Gonzalez, Melissa Scott, Erika Valeria Lara and Ana Vera)

The present study is directed to learn in general the cultural practices and utility of biotic resources by the inhabitants living behind *Popocatepetl*. San Nicolas de los Ranchos has population of 9981 inhabitants among which 4853 are men and 5128 are women. In total there are 1951 houses. Being situated very near to Popo and also due to the latitude and altitude, the climate is cold with a temperature varying from 5 to 10°C during the winter season. It receives high rainfall due to its proximity to the volcano. Several visits were made to meet various persons starting with office workers, housewives, and businessmen to collect the necessary information.

2.1. Edible plants

The following are the main crops:

Vegetables: Onion, fungus maize chilacayote, coriander, green bean, radish, etc.

Seeds: Maize, black and yellow bean, nogales (nuez), black and brown avocado.

Fruits: Apples, peaches, plumb, chabacano, Chinese pear, wild plum (*Crategus*).

Besides these, in spring different flowers were grown.

2.2. Medicinal plants

Tentojo is used for calmness (while angry); Ruda is used as tea for relieving delivery pain, stomach ache; Hierbamaistra is used for skin eruptions; Oregano and tomillo for stomach problem; Marubio is used for bath, wounds, diabetes and stomach; *Hierba olor a zorrillo* for curing stomach pain and diabetes; *Tipozan* for cough. The leaves are boiled in one litre of water with sugar. Leaves of chayote (squash) is used for diabetes; *Cola de caballo* for kidney pain; *Zacate* for diabetes. During the prehistory of Mexico, various plants were used to cure various diseases and the knowledge is inherited from generation to generation.

2.3. Plants that are used as paste or used externally

Resins for legs and bones; Arnica is used to cure wounds; Hilguerila (*Ricinus communis*) leaves used for high fever, for application on stomach cream is taken before applying on stomach; Topozan plant is used for bath with *ruda romeri* to cure pain; Plantsnillo is used to reduce temperature in fever, along with cream and tomato.

2.4. Plants that are used for inhalation

Alcanfor plant is boiled and the vapors are inhaled to alleviate cough and throat pain.

2.5. Timber yielding plants

Various trees are used for different purposes among which pine is important.

2.6. Animals

Cattle, goats, sheep, hogs, and chicken as sources of protein and meat. Majority of people eat pork. Animals are used for transporting products to the local markets; and for work in the field horses are used. Other types of animals found are mountain cats, hogs, squirrels and wild ducks.

2.7. Tradition

The majority of the people are Catholics. They pray particularly to the volcano for rain, good harvests and their protection. At 3 pm they offer fruits and food to Don Gregorio. They also practice Evangelical traditions. They wear stones in their dress and drink traditional liquor.

2.8. Food habits

- They eat mushrooms obtained from mountains. Due to ignorance about poisonous fungus, sometimes people die after consuming these poisonous fungi.
- Drinking carrot and beet juice is a general habit in the village and considered good for blood circulation.
- Wild amaranth.
- Vardolagus (not identified).
- Cook flowers of chilacayote (fungus infected maize cob); its fruits are also eaten.
- Many tortillas (chapathi) of maize.
- Very few people consume milk.
- They eat twice a day. Many families eat only one type of food, i.e. they do not mix other types of food. The majority of people prepare food using wood as fuel. They sell organo, hierba, Buena, laurel and manzanilla. They dig up gravel for sale. They also sell different fruits such as peaches and apples. They also use newly introduced varieties of beans for rapid cooking and also sell them in the local market.

2.9. Agriculture

- Very few crops of mushrooms
- The sown crops are irrigated with water from deep wells
- Apiculture, beehives are well developed
- They mainly sow maize
- Bean is sown to a great extent

2.10. Economy

The people in San Nicolas de los Ranchos have good knowledge of the utility of plants, such as medicinal plants and those for daily use. Maize, beans and apples, pears, plums, chabacana and Chinese pears are the principal crops of high economic importance.

The government should dedicate itself to the development of the region. Farmers use traditional techniques and irrigate from wells. Training should be given for better utilization of biotic resources. From the historic and tourists point of view, this is a very important zone as the local people celebrate events and festivals related to the volcano. Tourists are sometimes encouraged to visit and enjoy these cultural festivals organised by the local people.



3. Ethnological Study in San Pedro Benito Juarez, Puebla

(R.K. Maiti, Pia Mijares Mastrella, Gabriella Amado Lopez and Adriana Grayeb Hernandez)

These communities lack many basic amenities, such as drainage, electricity and drinking water, because these depend on the mercy of nature. The community is located near the volcano *Popocatepetl*, which often brings calamities.

3.1. History

On a stone pillar, the prehistory about the arrival of Chichimecas in the valley of Mexico is written. The Chichimecas upon arriving in the valley found an abandoned pillar called 'Tula' and finally reached there, where there were many caves. They found a mountain and named it as 'Xolotl' in honor of their commander-in-chief. Xolotl and his son Nopaltzan left to explore the valley, probably with their families and those lived in the house. The explorations lasted for many years as they searched for better places for hunting animals. They travelled to different places of Puebla states. Finally their journey culminated to the point of destruction of Xoloque region.

In the map of Tloltzi and the map of Quinstzin, people are seen with clothings made of grasses and hides of animals, which they had killed. They took shelter in mountain caves and in the lower areas in small groups, with each group having their own chief.

It is mentioned in Codices that battles occurred between hunters of the north and the people of Xolotl, who had initiated a peaceful way of life with the development of agriculture in the valley. Later the region was passed on to the sons of Nopaltzan. The first populations were Olmecas and Xicalancas who lived around volcano. Then they migrated to Atlixo.

The climate of this region is very cold due to its location very near to Popo. The temperature oscillates around 16°C at night. The number of inhabitants is 1600, because the village is very small with little extension.

3.2. Habit

The inhabitants wear a peculiar form of dress especially the women. It consists of one long dress of different colors (rose, red, blue, orange, etc.) and a blouse of the same color. Accessories include decorations and leather shoes, a cap with figures, and showy colors.

The great majority of houses are constructed with wood collected from the region, cardboard and aluminium sheets. The roof is of China mite or aluminium sheet. The houses are very small. They sleep on mats or wooden plank. Some of them have tables and sofas.

The majority do not have electricity. In general, in the streets or houses, there is total darkness at night. They have no bathrooms. They boil water by burning wood. Nobody has sanitary facilities. Though they are supplied with drinking water, they take water from the canal that comes from the melted snow, from the glaciers of Popo. They filter the water before drinking.

3.3. Agriculture

The majority of the inhabitants obtain their economic resources through commercialization of their agricultural products, sowing maize, bean varieties which are harvested in autumn and the beginning of the winter season. Besides this, some of the population possess small fields of avocado (*Persea Americana*). All these products are sold in the neighboring markets on Tuesday and Saturday. They do not grow vegetables or flowers, although one plant chayote-squash grows wild.

Besides crops, many possess animals in their ranches (cattle, hens, peacocks, horses, sheep, hogs, etc.) that are utilized for home consumption.

3.4. Plants

Many of them use medicinal plants to cure diseases like headache, toothache, and bleeding, insect bites and so on. The principal plants utilized are manzanilla, yerba Buena, arnica, oregano, lemon, pine oil, etc. These plants are not only used for medicinal purposes, but also in the preparation of foods giving good aroma and taste. These are mixed with beans or chicken dishes. Also, they have religious tradition distinct from the Catholic practice and associated with witchcraft. For collection of edible fungus, they go to the bottom of Popo, where they sometime get lost among forests and mountains, while searching for them. Many of the old people know where to find a particular plant. This knowledge is inherited from generation to generation. They also know what is edible, traditional or hallucinogenic. They consume different types of fungi.

3.5. Animals

Horses and asses are used in the fields for agricultural operations, harvesting maize and beans or other crops.

3.6. Food habits

The preparation of chapathi is complex. They do not have grinding machines. They separate the grains of maize in a corrugated stone mortar, grind the grains with a hand mortar and then make mixanal. They also use other types of handmade equipment like molcajete, comal, *cazuelas de barro*, spoons and wooden sticks. Women prepare the food, cook bean and take them to the field to their husbands during daytime. The men after hard labor return home before sunset.

3.7. Culture

The mother tongue is Nahuatl, which they speak among themselves. Some of them know Spanish. In schools Spanish is taught in the first class. It is not desirable to speak Spanish in front of outsiders. There is only primary school in the village. Very few of them go to the secondary school for which they have to walk a very long distance. Many of them help their parents in fields or in housework.

Some of them go to the municipality or cities to look for jobs, and for better living conditions, after finishing bachelor studies.

The main religion is Catholicism, but there are families who follow different religion as well. There is only church in the village to celebrate religious ceremonies.

Couples live in free union, even at an early age, since long time. The young girls follow the examples of their grandmothers



and mothers and start mixing with boys at an early age. The period of adolescence starts as early as from ten years of age, especially with girls. At the age of fourteen to fifteen years they mix freely with boys and begin to give birth to children without marriage. Some of them have five children. Women practice witchcraft to cure diseases or drive away evil spirits from the body of the victim.

The principal social problem is alcoholism. They spend their nights with friends consuming excessive alcohol in the canteen and come back dead drunk at night; often beat their wives and children. The children suffer greatly by the ill-treatment of their fathers.

The villagers celebrate a festival once in a year in honor of the apostl San Pedro. They light fireworks, attend lectures given by the priests, and march through the whole village with the image of San Pedro and offer flowers and gifts praying for a good year.

The village occasionally faces problems when Popo starts emitting gases and ash, which fall directly on the village thereby affecting public health. In 1994, the volcano reactivated. In December 2000, the people were evacuated and moved to safety camps in Puebla.

In conclusion, this investigation has given us an opportunity to know about the condition of the people, where they live, their customs, and traditions and the social and economic problems they face. They are gradually losing their traditions and culture with migration and urbanization. Nature plays an important role in their life style. From it they obtain their resources; from agriculture enriched by the lava of the volcano and drinking water from the melting of snow from Popo. They lack electricity and other amenities of life. Their life style is greatly influenced by the activities and mercy of the volcano Popo.

4. Ethnobotanical Study in Santa Magdalena Yancuitla and Tochimilco, Puebla

(R. K. Maiti, Anna Dense, Fisher de Leon, Patricia Sarquis Martínez, Renta Pavella and Cruz Aguilar)

Santa Magdalena Yancuitla is a community located in the heart of Tochimilco, approximately 2 h from Puebla by the highway to Mexico. There are approximately 3236 houses with an average of 5 inhabitants in each house.

Santa Magdalena Yancuitla received its Spanish name in 1712, when a Catholic church was constructed there. This was constructed with bricks made in the furnaces of the inhabitants. The church is of eighteenth century origin and was adorned in the pure style of the neoclassic era. The natives of this place received the name of Yancuitlalpaneco and are descendents of pre-hispanic population. A small portion of this population culture still speaks their native language Nahuatl, although many have lost this tradition. The index of community is low. Few cases of conflicts among families and crimes are observed owing to alcoholism. The majority of land belongs to the government and very few persons possess their own lands. The fields are found by the side of mountain slopes and are covered

with waste paper and residuals. The health service has implemented methods of birth control using tablets or injections, although women are resistant to adopt these practices. They believe that God determines the number of children a couple should have. The majority of the population lives peacefully. Each family has four to five children. No kindergarten schools are available. They can study only up to the primary level in the community.

The festival of Santa Magdalena is celebrated on 22 July every year. This is associated with typical dances representing Moors against Christians. The phenomenon represents the fighting of the Spaniards when they were conquered by the Moors. The dancers use crowns with its Mexican variants and adorn themselves with precious stones (*listons, capas, espaldos*), which simulates the Moors. All these celebrations are accompanied by fireworks, public dances, processions and popular decorations. Other festivals of great importance are the 'Posadas' held during Christmas period 'Semana Santa' for all these festivals.

The majority of men work in the field, while women take care of their children. Some men dedicate themselves to the manufacture of family partition walls. Many young men illegally enter USA to earn money. Generally they dedicate themselves to the cultivation of beans and flowers which are used in commerce. Maize and other products are sown for their own consumption. Men have a dominant role in the family. The women work harder as men who work in the field and return at night usually drunk.

4.1. Biotic resources

4.1.1. Animals

In general, the people do not breed animals. A few of them have sheep, goats, bullocks, hogs, asses or horses, although all of them have turkeys and chickens. The latter are consumed by the family, while the horses and asses are employed for agricultural work in the fields. The people generally do not drink milk, because they do not have cows.

4.1.2. Timber

In the majority of cases they cook food by using wood as fuel obtained from oak (*Quercus*), oyamel and ocote. They do not cut the plants, but collect the parts of the plants left behind the timber nursery.

4.1.3. Edible plants

The plants used are maize, beans, the leaves of coriander, squash, calabza (gourd), avocados, *lengua de vaca*, lemons, onion, etc.

4.1.4. Medicinal plants

Manzanilla, arnica for wounds; cuajala for eliminating blisters; ruda for headache and earache; and zavila (*Aloe vera*). It is known that the people in general have stopped using medicinal plants and only old people use them quite often.

4.1.5. Plants for sale

Flowers such as aleti, nube, gardenia (*flor de muerte*), amaranth, dahlia, jasmine, alfalfa are sold at the end of week in the market of Atlixo.

4.1.6. Native plants



Some of native plants found are Arbol of aguacate, sisal, guayaba, *lengua de vicor*, cuajala and *La vaca*. There are shops where people buy their necessities. It is a purely capitalist society. Their crops are not sold, but are meant only for their consumption. The principal diet consists of beans, maize and herbs, sometimes mixed with eggs and meat. The people in general are well behaved and kind-hearted and easily accessible, although it is difficult to take their photographs, owing to their religious beliefs which they do not disclose to us. In conclusion this investigation has given a great opportunity to learn about some of the pre-hispanic cultures still maintained in this community, living near the great volcano Popo.

5. A Study on Ethnobotany and Biotic Resources in Santa Maria Tianguistenco, Puebla

(R.K. Maiti, Diana Laura, Lopez Santiago, Yasel Ma Cuarnos Orea, Araceli Perez Ocejó, Ma. Alejandra Davila Hernandez, Gerardo de la Pedra Cacho and Gabriela Peniche Peyton)

The climate is temperate, summers are fresh, with moderate precipitation. The population lives on a mountain and inaccessible because of the uneven, bad roads. The total population is only 550, among which 310 know alphabets, fifty-two persons speak only the indigenous language, fifty-two speak Spanish as well as the indigenous language and the rest only Spanish. There were only ninety-six houses. On an average 6 persons live in a house.

5.1. Families

The population consists of 37% men and 63% women approximately. The number of family member living in a house ranges from one to five. Each couple has one to five children. The young men between the age of fourteen to twenty-five mix freely with their girl friends 'novias'. Approximately 54% of the couple marry in a civil court, 30% marry in the church and the rest marry socially.

5.2. Education

The majority of persons get education only up to the primary standard, but the maximum level of education is up to the secondary level.

5.3. Employment

People start working at the age of twelve and in general work in the field. Some attend the shops of the village; others work in the schools or business. Some work in Mexico city.

5.4. Religion and festivals

About 99% of the population is Catholic and only 1% is Evangelical. The traditional religious festivals of the village are held on 12 December, 12 May and 29 June. These festivals are celebrated according to the customs of the village, which include preparing food, organizing dances, fireworks and drinking heavily.

5.5. Services

The villagers have only supply of drinking water. Very few families have access to gas-fuelled hot water. The rest of the

families get hot water by heating with wood or vegetable carbon. All the houses have a latrine or bathroom. The majority of persons take bath from water collected in drums. The women prepare food with gas or those who have no gas, prepare food by firewood. The whole village has electricity. Each family has a radio and some of them have antennas.

5.6. Transport

Very few people own cars. The majority of the people use transport facilities.

5.7. Bad habits

Approximately, 30% of the population smoke, while 70% drink alcohol. Some people drink liquor daily, while the majority of them only drink during festivals and on weekends.

5.8. Shops

The village has three shops; some go to nearby city Huejotzingo to buy their necessities. They obtain some food from the biotic resources of the region. Also they meet their necessity from the agriculture and animal production. Many of the resources like fruits, fungus, wood and other seasonal plants are collected and are utilized to cure diseases. They breed animals for their investment and for their own consumption like eggs, meat, etc.

5.9. Biotic resources

Basic resources are divided into two parts, plants and animals. The utilization of these resources is the main activity of the community. The majority of the population is dedicated to some activities in the field and the majority have animals for their own consumption. Some families are very rich. Some members of their families work in foreign countries and earn good salaries.

5.9.1. Vegetable resources

The vegetable resources that are highly utilized are maize, beans and some Graminaceae, mainly for their own consumption. Some of them sell their products in the markets in Huejotzingo. These vegetable resources are also utilized to feed animals. One Graminaceous species called 'Salvadillo' is given to animals, hens, chickens and peacocks. Plant resources are obtained seasonally. For example, in autumn; such as peaches and pears are not available, but small gourds, squash are produced in abundance for their own consumption and for feeding the animals. Another important season is summer, where owing to the rains some varieties of fungus grow in abundance and are collected and included in their diets. The common names are azulitos (*Lactarius indigo*), choletitos, san juaneros, and trophadas (the scientific names of these need to be identified in future studies).

5.9.2. Animal resources

The use of distinct species of animals as biotic resources for satisfying the needs of alimentation, dress, transport and in some cases as domestic birds or dogs, play a very important role in the community of Santa Maria Tianguistenco.

With the exception of *Equa caballus*, *Equus asinus*, and *Wquaus* sp., all other species are edible and form an important source of protein most accessible to the community.

Generally young animals are bought from the markets from



neighboring cities. Later these animals are fattened and utilized during festivals on 12 December, and some other festivals like marriage ceremonies and others in church.

The fattening of animals is done by feeding the animals with vegetable resources of the region. Among them are the wild Gramineae, salvadillo, maize fodders, maize grains and cobs. In autumn, calabza is utilized to feed pigs. The processed aliment constitutes only to complement in the alimentation of species like *Gallus domesticus*, *Meleagris gallopavo* and *Suscrofa domestica*.

6. General Conclusions

In general, the hypothesis planned is accepted in comparison with the biotic resources utilized in the community, with respect to the other more urbanized community, such as Huejotzingo. The majority of the people have some species of animals for their own consumption mainly, and husbandry is not an activity with economically exploitable potential. They raise the animals by breeding. These animals are fed mainly with available vegetable resources and also fed with purchased processed feed. Large varieties of plants of the regions are utilized in some form or other. Many of the vegetable resources are seasonal. Many types of fruits are collected from their wild habitat in a particular region. Fungus is available in abundance only in the rainy season. Some medicinal plants are widely used to cure various diseases. Some of these plants are bought from the markets. The rural communities widely use many of biotic animal resources for their own consumption. The conditions that determine a major and wide utilization of biotic resources in the community are those resulting from its reduced number of inhabitants and its relative isolation from more urbanized communities. Another factor more important is the biogeographic factor, pertaining to these organisms that are present in the region and may be utilized by the human population. The region shows a great diversity, which should be exploited and may be utilized at a sustainable level for the benefit of the rural population.

All the localities mentioned above are situated near the volcano *Popocatepetl* and its surroundings; as a result the life style and economic conditions of the rural population are greatly influenced by *Popocatepetl*. The economic conditions of all the population of all these places are largely influenced by the commercialization of their plant and animal products in this most important commercial center of the region.

It may be mentioned that for the farmer and indigenous communities located around the volcano *Popocatepetl* as well as in other places, the cultures of the communities are manifested in the perception of their natural resources and their relationship with nature around them. Little attention is given to do research on these native communities. In other words, the mountains, water, animals as well as agricultural cycles and their existence on the earth have originated a historic, social, agricultural, religious and varied calendar as well as the construction of holy spaces of a temporary or territorial nature. In the first

place, they establish a holy time when traditional celebrations are conducted. In the second place, they announce and locate holy places such as caves, mountains, rivers or the volcano *Popocatepetl* or some archaeological or pre-hispanic culture with particular significance for these ethnic communities. In each society, their elder persons were specialists in the region for the performance of rituals or traditional celebrations related to the Catholic religion. They observed the planting of flowers in the cave before harvest, the celebrations of the day of the dead, the day of Santa Cruz, the collocation of garlands, fruits, sweets, amaranth seeds, etc. near the crater of the volcano *Popocatepetl* or realization of other special functions to please their God Popo for his mercy to reap good crop harvest. Some special persons claim to have direct communication with Popo and advise the communities to take special precautions or observe celebrations. *This is unknown to the outside world.*

In order to save the rural communities living around *Popocatepetl*, the government is interested in finding alternative, non-risky places, for their settlement and is planning to make such localities as places reserved for tourists. In my opinion, by settling the inhabitants of *Popocatepetl* in other places, we are apprehending the loss of the traditional ethnic culture completely, which need to be conserved. Attempts should be made to preserve the rich ethnic culture. Governments should concentrate on the development of the localities by construction of good roads, hotels, recreational parks and sport complexes, which will attract foreign tourists to enjoy the surrounding of the volcano without disturbing the culture. In the case of violent eruptions, the inhabitants could be transported quickly where they may be provided houses and lands for agriculture. In this case, the inhabitants can visit their original abodes during safe periods, thereby conserving their culture. The lands around the volcano are enriched with minerals and nutrients deposited during eruptions. They get good harvest and sell these to the markets like Cholula in Puebla and other cities as good source of income.

7. General Literature

- Alexander, R.T., 1998. Socio-cultural anthropology. *American Anthropologist* 100(3), 820.
- Ankli, A.S., Otto, Y., 1999. Maya medicinal plants versus non-medicinal plants: indigenous characterization and selection. *Human Ecology* 27(4), 557.
- Bower, B., 1989. Late Maya culture gets an island lift. *Science News* 78/79, 20.
- Cioffi-Revilla, C., Todd, L., 1999. Evolution of Maya politics in the ancient Meso-American system. *International Studies Quarterly* 43(4), 559.
- Dunning, N.P., Timothy, B., 1994. Soil erosion, slope management and ancient terracing in the Maya lowlands. *Latin American Antiquity* 5(1), 19.
- Fischer, E.F., 1999. Cultural Logic and Maya Identity: Rethinking Constructivism and. *Essentialism*. 40(4), 473.
- Fusco, C., 1995. Other history of international performance,



English is broken here. Notes on Cultural Fusion in the Americas.

Gossen, G.H., 1993. Word and image in Maya culture. Book Reviews, *American Ethnologists* 20(2), 431.

Haviland, W.A., 1992. Status and power in classic Maya society: the view from Tikal. *American Anthropologist* 94(4), 937.

Little, W.E., 2000. Homes as a place of exhibition and performance; Maya household Transformation in Guatemala

39(2), 163.

Todd, J.E., 1998. In the Museum of Maya Culture (Book reviews. Chichen Itza Site (Mexico). *Anthropological Quarterly* 71(3), 159.

Tourtellor III., Gair Clarke Ananda. 1993. Mapping la Milpa: a Maya city in north-west Belize. *Antiquity* 67(254), 96.

Werime, R., 1992. Maya cities in the jungle. *South-west Review* 77(2/3), 170.