

IVON PEREIRA

A PARTICIPATORY COMMUNITY-BASED EXPLORATION  
OF SUCCESS FACTORS IN FOOD PRODUCTION, INCOME GENERATION AND  
ENVIRONMENTAL PROTECTION

**Introduction**

Human ecology's mission is the creation and maintenance of "an optimum balance between people and their environments" (Sontag and Bubolz 125). This paper is a component of an MSc graduate research Project. The intent is for urban farmers to achieve the ecological balance necessary to sustain their individual, family, and community development by using locally appropriate agricultural resources and knowledge. Two aspects were considered essential. The first is the exploration of new knowledge through research. "Research is ...a systematic inquiry aimed at the discovery and interpretation of new knowledge" (Gibson and Gibson 3). The second is the creation of an appropriate approach for participants to pursue their own development through capacity building and empowerment. Both of these objectives were met.

The paper introduces the Ecological Participatory Action Research (EPAR) model created to explore the role of Indigenous Knowledge (IK) for micro-entrepreneurs to build new opportunities for food production, income generation, and environmental protection. The paper is based on participatory fieldwork that took place from June to October 2000 in the communities San José Cortez, Mireya II, and El Limón of the capital city, San Salvador in El Salvador. Nine families -three per community- for a total of 74 people, participated in the research (see Table 1).

**Table 1**

Age in years	Mireya II		San José Cortez		El Limón		Totals by gender		Total
	F	M	F	M	F	M	F	M	
< 10	1	1	6	1	2	4	9	6	<b>15</b>
11 - 20	3	0	4	4	4	3	11	7	<b>18</b>
21 - 30	3	1	2	4	2	2	7	7	<b>14</b>
31 - 40	0	0	5	1	1	1	6	2	<b>8</b>
41 - 50	1	1	2	3	1	1	6	5	<b>11</b>
51 - 60	0	1	1	0	0	0	1	1	<b>2</b>
61 - 70	2	0	2	1	0	0	4	1	<b>5</b>
71 - 74	0	1	0	0	0	0	0	1	<b>1</b>
<b>Totals</b>	<b>10</b>	<b>5</b>	<b>22</b>	<b>14</b>	<b>8</b>	<b>11</b>	<b>44</b>	<b>30</b>	<b>74</b>

F = female      M = male

### **Background information: El Salvador**

Incas, Mayas, and Aztecs were the more developed indigenous cultures in Latin America thousands of years ago. Researchers are not in agreement about whether the Salvadoran population descends from the Maya or the Aztec culture. The Mayan corn culture, Aztec social organization model, and Mayan and Aztec economic models have been found in the Pipiles culture, which was predominant in El Salvador at the time of the colonization (Equipo Maíz 485).

According to *Equipo Maíz*, the native name for El Salvador was *Cuscatlán*, which means Land of Happiness. There were two tribes before colonization: Pipiles and Lenca. Over time, the Pipil culture absorbed the Lenca culture. The Pipiles divided the territory in *Cacicazgos*, or regions, which internally, were divided into *calpullis*, or communities. Each *calpulli* shared land and food and paid tribute to priests and nobles. Each family was assigned a plot of land to cultivate. The Pipiles' economy, like that of the Maya's and Aztec's, was mostly based on the cultivation of corn and other vegetables. There was both common and private property. They were also advanced in scientific matters such as writing, mathematics, the calendar, and architecture. However, after 15 years of war, in 1539, the Spanish conquerors subjugated the Pipiles, destroying their culture, religion, and social and economic organization. At that time, a mixed race emerged, (Equipo Maíz 69).

At present, one hundred percent of the Salvadoran population is mixed (mostly Spanish and indigenous). Poverty and depletion of natural resources are their biggest problems. Most people make their living buying and selling things and cultivating traditional subsistence, ornamental, and medicinal crops to feed their families and/or to sell, but only a few succeed (Balsam, personal communication, April 24, 2000). However, the nine urban farming families that participated in the research have succeeded in using their indigenous knowledge, beliefs, perceptions, and approaches to produce food, and crops for cosmetic, and medicinal purposes, while protecting soil and the biodiversity of plants. The study of their experience is important. It provides relevant information for a variety of communities, NGOs and the government. This information could be useful in designing urban agricultural projects to support the poorest of the poor in creating healthy human conditions.

### **The concept of Indigenous Knowledge(IK)**

There are several definitions of Indigenous Knowledge and traditional knowledge. Agrawal (1995), Warren (1996), and others use both interchangeably (Berke 99).

In 1980, David Brokensha, Oswald Werner and I were struggling to find a term that could replace 'traditional' in the designation 'traditional knowledge'...we wanted a term that represented the dynamic contributions of any community to problem solving, based on their own perceptions and conceptions, and the ways that they identified, categorized and classified phenomena important to them. At the same time, Robert Chambers and his group at Sussex were struggling with the same issue. Independent of each other, we both came up with the term 'indigenous', (Warren 13 in Berkes 5).

For the purpose of this research, the term "indigenous knowledge" has been adopted and defined as a "unique, traditional, local knowledge existing within and developed around the specific conditions of women and men indigenous to a particular geographic area" (Grenier 1) and as "the understanding, practices and perceptions generated and transmitted over time within a particular or local setting that form the basis for survival" (Fernandez 21).

According to *Equipo Maiz*, the Pipiles in El Salvador resisted assimilating into Spanish culture just as most Salvadorans, throughout the generations, have also resisted assimilating influences from other cultures. However, "IK systems are also dynamic: new knowledge is continuously added. Such systems do innovate from within and also will internalize, use, and adapt external knowledge to suit the local situation" (Grenier 1). In this way, agricultural Indigenous Knowledge in El Salvador is currently a hybridization of traditional and contemporary knowledge. New knowledge has been added throughout the generations, developing the specific local Indigenous Knowledge revealed by the research.

In this paper, then, "indigenous knowledge" will be used to refer to the knowledge, beliefs and perceptions inherited by the research participants from their ancestors and that have evolved into the knowledge, beliefs, and perceptions currently used by each of the research participants to produce food and generate income through urban agriculture. Every family member has her/his own way to contribute to farming activities. "All members of a community have *traditional ecological knowledge*: elders, women, men, and children. The quantity and quality of the Indigenous Knowledge that individuals possess vary" (Grenier 1).

### **The Ecological Participatory Action Research model (EPAR)**

EPAR was developed by the researcher, based on her experience using the Participatory Action Research (PAR) approach in community development programs in El Salvador, Nicaragua, and Canada since the 1970's. EPAR integrates the PAR, the ethno-methodology and ecological perspectives, and the agenda based evaluation model.

PAR, according to Smith et. al. (1997), is a process of education, analysis, action, and investigation. It is a process that must be carried out systematically and consistently by the community with the help of the researcher. Together, they take actions and try to

make changes, looking for the solutions to concrete problems and conflicts. The process follows a spiral integrated by six internal processes. Each process is interrelated with the others, but does not necessarily follow the next phase directly (Smith 251).

Ethno-methodology provides access to the daily life of urban farmers, observing, recording, and describing the “most routine and taken-for-granted aspects of [their] reality” (Rothe 73) as “knowledge arises directly from practice, rather from reflection about it” (De Souza 31). This method helps the researcher to participate in the daily life of the community, observe the families involved, and to “capture data from individuals who could not normally speak” (Rothe 121). Women in marginalized communities are usually quiet and tell more by doing than by speaking, so the researcher’s observation of their pattern of activities and relationships is very important. “The value of ethnography as a social research method is founded upon the existence of . . . variations in cultural patterns across and within societies, and their significance for understanding social processes” (Hammersley 9).

The ecological perspective helps to understand “how the [farm] is zoned, according to people’s use of space, geographical mobility and the placement of barriers” (Rothe 84). One of the reasons these nine families were chosen to participate in the research is that they have been cultivating the same small plot of land (between 10 and 70<sup>2</sup> m) for at least three consecutive years. Knowing how they have managed their small spaces for cultivating variety of plants while protecting the soil from depletion was crucial.

The agenda based evaluation model helps “measure the process of negotiating the goals ... [and] evaluate the stakeholders’ perspectives of the project’s effectiveness”. (Gibson et al. 4). Each research participant, individual, community, or institution, brings its/her/his own agenda to the research process. To be able to negotiate and renegotiate according to own needs and perspectives and the needs and perspectives of the group, is very important.

EPAR then, assumes the six phases of the PAR model (Smith et. al. 87), giving them a new perspective and new content. The six phases are also interrelated and each of them is a process itself and does not necessarily follow the others in sequence (see Figure 1).

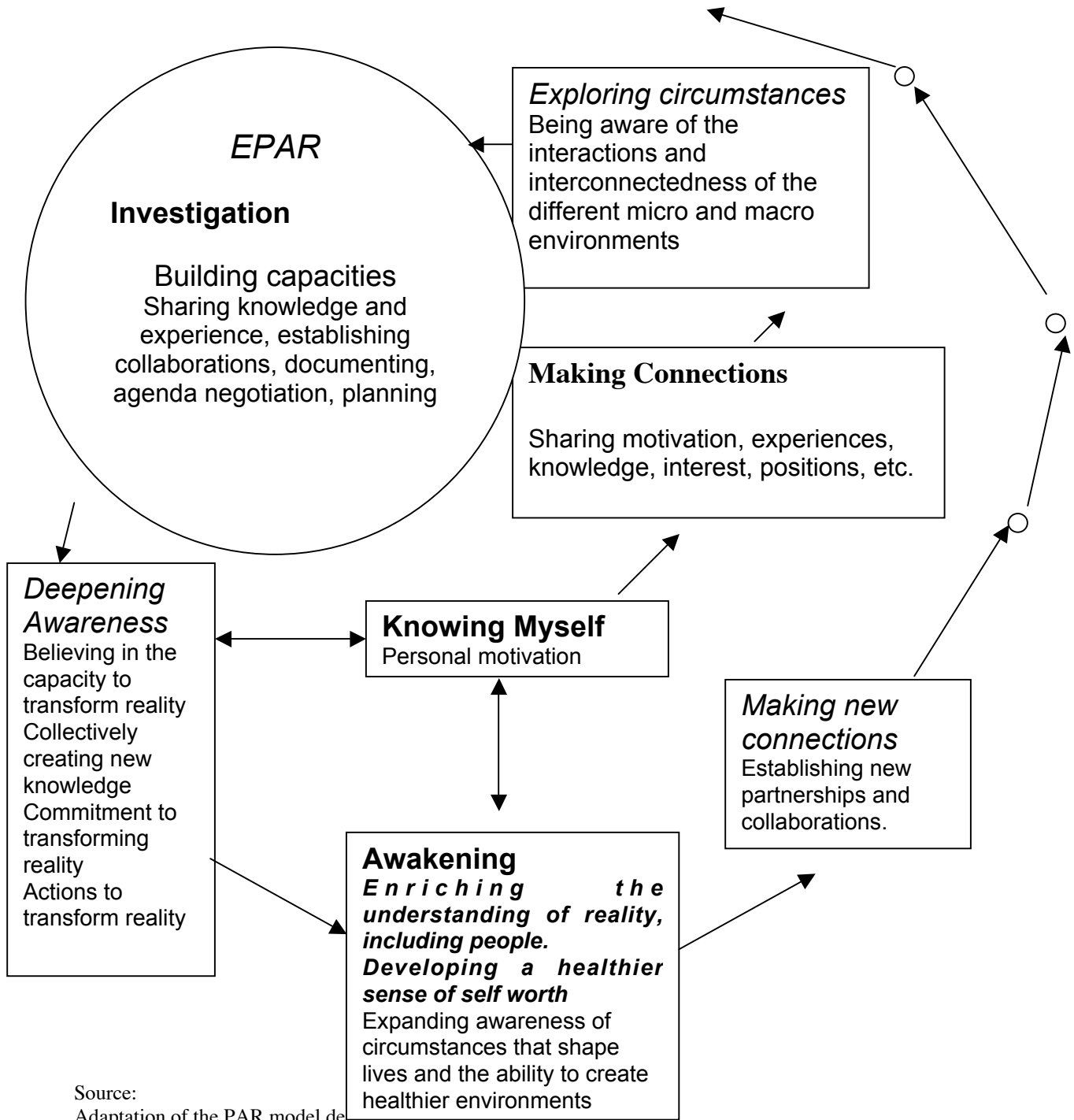
The new EPAR model was designed to combine research and development within an academic environment, in contrast to the prevailing tendencies. “There are two strands to the evolution of the indigenous-knowledge perspective which have remained largely independent, one academic and the other development-focused” (Sillitoe 224). The purpose of this combination is to validate Indigenous Knowledge as the philosophy that will make possible the creation of a new model for community development.

### **Process followed during the field work in El Salvador using EPAR: Preparation of the researcher**

To know who I am and why I want to do this specific research is essential. “What each researcher observes and interprets is never independent from his academic background, his previous experiences and his own involvement with the situation under investigation ” (De Souza 34). To use the PAR model is essential to have a deep desire for social change and justice. To use EPAR model is equally essential because the researcher’s own motivation, knowledge and experience will definitively affect the

research process and data interpretation. The researcher's long history of observing how poor people in El Salvador struggle to meet their basic needs and how the environment gives less and less to meet those needs, has given her a deep desire to make a difference in poor farmers' lives. This was the central starting point for the research process.

**Figure 1: Ecological Participatory Action Research model as seen from the perspective of the research coordinator**



Source:  
Adaptation of the PAR model developed by Simons et al. (1999)

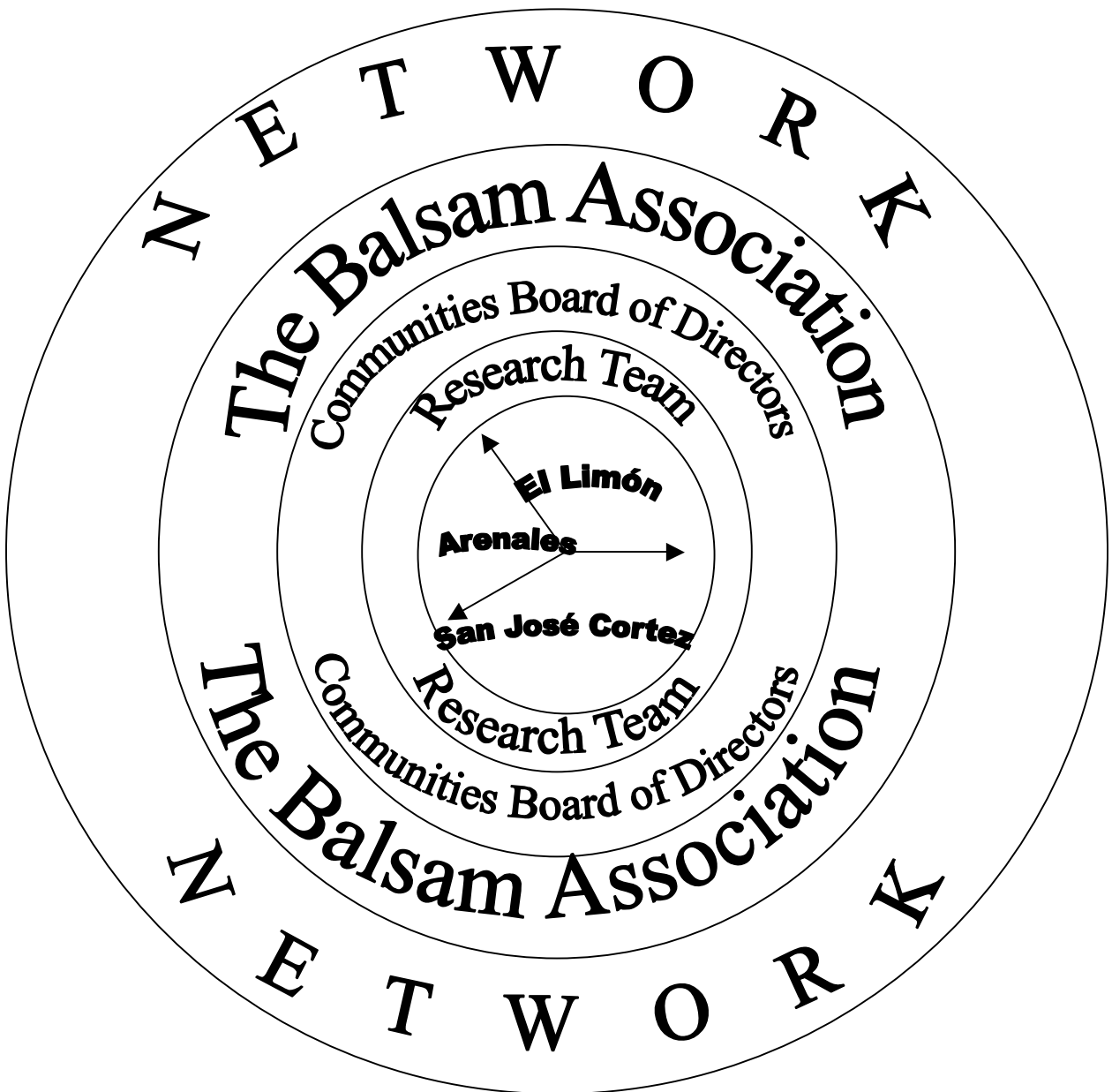
**Making connections**

Besides creating a sense of community as in PAR, the EPAR model further searches for project sustainability. In EPAR, It is very important to partner with community organizations and institutions that will give continuity to the research and to

the development project. For the purpose of this research, the researcher contacted a Salvadoran developmental NGO, The Balsam Association (Balsam), a Canadian environmental NGO, The Garden Institute of Alberta (GI), and the Micro-entrepreneurs network (MN) supported by Balsam in El Salvador. Representatives of Balsam, GI, and MN and the researcher began sharing motivations, interests, experiences, and knowledge, which later were also shared with the participant families. Representatives of the different stakeholders formed a research team (see Figure 2), which negotiated the preliminary research goals and the researcher became a research coordinator as all members of the team converted into researchers. Balsam, GI, and MN, besides supporting the research coordinator, also started developing a partnership to support community initiatives for an endogenous development. In this way a development project called El Salvador-Building on Biodiversity (BOB) project was designed. Phone and e-mail communication, informal contacts, participation in gatherings and social events, meetings, workshops and participant observation were the techniques used in the project. The research coordinator helped Balsam, GI, and MN to organize and develop the first phases of BOB in Canada and El Salvador before starting her fieldwork. This allowed her to participate in the formation of an Urban Agriculture Network, which later supported the research coordinator in choosing the research communities, families and participants.

Figure 2

# Organizational Structure





The research team advised the research coordinator in other matters related to her work, such as entrance to communities and choosing of residence. The research coordinator did not stay in any of the three communities investigated. El Salvador is greatly burdened by political, religious, social, environmental, and economic problems and people still struggle with the consequences of the war from the last two decades. Within communities there are political and religious subcultures. If the research coordinator stayed with a specific family in a specific community that belongs to a specific group, other people would tend to associate her with that group and the research process and the results would be in jeopardy. To try to be identified as a neutral person, the research coordinator stayed in a modest home close enough to each of the three communities.

### **Exploring Circumstances**

The PAR approach is grounded within the research participants' context (Smith, et. al. 115). EPAR also explores internal and external circumstances in order to be aware of individual and community strengths and weaknesses, as well as the opportunities and barriers in the different micro and macro environments. Bibliographic analysis, oral history interviews, and informative seminars and workshops were the techniques used. The analysis of Salvadoran documents and publications helped the research coordinator to learn:

- IV) What had already been investigated
- V) The economic, social and environmental context in which these families live
- VI) The resources available to the communities to continue their development process.
- VII) The new information gathered led the research team to re-negotiate the preliminary research goals and to achieve consensus about the research process.

### **The Process of Investigation, Capacity Building and Action**

The research coordinator and research team worked very closely at a grassroots level, enabling people to believe that they are all responsible for, and the owners of, the research project. In this phase, the following techniques were used:

- i) Participant observation was combined with the action of farming. The research coordinator observed and participated in farming which allowed her to learn by listening and by doing. Using these techniques, the daily gender/power relations, use of space, farming patterns, and farming procedures were documented. Because interpretation of data is always subjective, this information was also corroborated through informal semi-structured and semi-open interviews. It was considered very important to learn how research participants verbalize their own actions.
- ii) Through oral history interviews and tape recordings, changes in farming philosophy and procedures and factors that historically have influenced those changes were documented. Three female community leaders with strong backgrounds in agriculture were chosen to be interviewed.
- iii) Workshops and meetings helped to build new capacities as participants were involved in sharing knowledge and taking collective decisions on the research

- design, process, and the data gathered. Participants also helped to analyze the new information and create new knowledge about farming and plant uses, which was immediately used to design new community initiatives for endogenous community development. “*Action* signifies a process of continual change both in the research process and the situation” (Rothe 95).
- iv) Taking pictures of major food, medicinal, cosmetic, religious, and ornamental crops was helpful in documenting the sixty-four plants cared for by research participants and their uses.
  - v) Within this process, all research participants felt the need to change themselves. By changing, they started contributing to changing their environments for the better. An example of this is that with Balsam’s help, they organized within the research process community workshops in their own homes to teach their neighbors their environmentally friendly urban farming.

### **Deepening Awareness**

Through this process, research participants increased and enriched their understanding of their community’s internal and external reality and of their own ability and capacity to transform those realities and create change. In the process each person merged into a “we” with a common goal to use the new information and knowledge to design their own proposals for development. An example of their activities was the creation of some project profiles in order to apply for funding to enable participants to continue researching while applying their new knowledge.

### **Awakening**

Research participants showed their new understanding exercising their right to speak and be listened to. They talked to neighbors, relatives, schools, and churches, sharing their new knowledge and experience. At the end of the fieldwork, research participants organized and developed a day-long conference to disseminate the research findings and get feedback from other communities and local NGOs for the final document. In the conference, all research participants shared their new and indigenous knowledge, experience, and power with other communities and NGOs representatives. They also shared their native food and showed samples of their native plants.

### **Summary of EPAR**

The research process developed in El Salvador showed that EPAR is a process that combines investigation with capacity building and community action to empower research participants and the researcher, while providing data for the purpose of the research hereby producing the changes needed in different environments that influence the current status quo within the communities investigated.

EPAR also emphasizes the role of creating self-awareness of the biophysical environment and thus helping to change attitudes towards nature in both the South and the North. In this research, EPAR helps the researcher acquire a holistic understanding of the research participants’ practices in relation to their well being and their community development and helps research participants start building a new future on the cultural heritage in which they will feel comfortable. EPAR also helps research participants to

start building partnerships with other communities in the South and in the North to support each other and share knowledge and technologies.

EPAR is a process of education and social interaction for an endogenous development in which Indigenous Knowledge is crucial. During the research process, participants learn both to use their own knowledge to find solutions to their problems and that international partnerships can support endogenous development. The well being of people intrinsically interconnected with their environments (social, cultural, economic, political, and physical) is enhanced. Keating et al. (1997), in their writing about the care for the elderly, point out assumptions that turn clients into partners and actors in the process of their own care. In Indigenous Knowledge research using the EPAR model, clients are families who are trying to develop by becoming partners and actors in their own destiny. Sometimes, the researcher is the expert, who becomes the client and vice versa. Each teaches the other within the process.

EPAR is, then, an important and radical approach that attempts to resolve problems that have not been solved with the current PAR model, such as the contrast between the modern and the traditional and between the North and the South.

### **Indigenous Knowledge in El Salvador**

During the research process, it was found that the Indigenous Knowledge of the nine participating families is the key element to succeeding in urban farming. The use of indigenous knowledge, beliefs, and perceptions helped research participants to cultivate sixty-four kinds of plants and agro-process them, producing food and natural medicines, generating income, interrelating with/to others, having fun, expressing love, and conserving biodiversity. They prepare the soil with natural fertilizers, pesticides, herbicides, and manual removal of weeds. They buried organic waste, keeping the house clean, conserving soil fertility and diverse plants alive. The local experiences documented are a kind of new knowledge that reveals some “indigenous indicators to determine favorable times to prepare, plant, and harvest gardens” (Grenier, 1998, p. 3). As well, methods for soil and plant protection and pest management, seed storage, and cropping systems were shared.

Research participants also perceive nature holistically. The environment is believed to be the result of the human relationship with nature (Equipo Maíz 123). However, scientific advancements have made them understand those relationships beyond the scope of astrology and astronomy as it was in ancestral era. They now have acquired new knowledge about other sciences and disciplines. For them, then, the environment is a holistic integrated web that integrates biology, economics, politics, gender relations, and culture just as they are all interconnected in their daily farming activities. Today’s agricultural practices are the results of traditional and modern techniques as well as of their beliefs and perceptions about life and the relationship between humans and plants. For example, participants mix sulfate and ash to fertilize plants, use soap, pepper and garlic to control pests, and practice crop rotation “cuando a la planta no le gusta donde la tienen” [when the plant does not like where it is].” If you do not move the plant, they say, it will not produce what you expect. They practice companion planting because plants protect and help each other. Some plants protect other plants against disease/pests; for example, corn-onion-corn, corn-garlic-corn or corn-tobacco-corn. Some plants help other plants with nutrients; for example, corn-bean-corn.

They also see plants as member of the family; for example, they believe that plants need to be talked to, that they have tastes or preferences, and that they respond to the way they are treated.

An important success factor, which was revived during the research process is the religious cosmos-vision inherited from Salvadoran native people. This vision helps people perceive the land as a source of life and success as the ability of each family to live in harmony with nature and to create healthy communities for all. This concept of success is essential for the creation of a new community development model. It contrasts with the predominant contemporary model in which success is defined by the quantity of things each family possesses or consumes or for the status they have within their society. In the new model started by research participants, success is related to their ability to work with and for others in order for everybody to improve their quality of life. There is also a collective understanding that if all countries consumed in the same way and quantities as rich countries do, the planet would not last for long: Seven Earths would be needed (Equipo Maíz 57).

### **Conclusions**

Current social and economic conditions in El Salvador urgently require a new community development model in which IK and the EPAR research model are essential. IK supplies a philosophy and techniques for understanding the interrelation between humans and nature and the need to share resources for the well being of all. EPAR provides a tool to organize people and programs, build capacities, and create knowledge.

IK, within the context of the families, involved both the classification of plants and the indigenous understanding of nature.

Traditional ecological knowledge is usually presented by anthropologists and others in one of two forms (sometimes both): folk taxonomies (the ethnobotanical and ethnozoological classifications of plants and animals), and as indigenous understandings of 'natural' processes (systems of relationships involving plants, animals and various supernatural and environmental factors). Together these two broad kinds of information have been constructed as constituting traditional ecological knowledge" (Lewis 8).

Research participants showed their use of Indigenous Knowledge in the way they have conserved sixty-four variety of plants by using them in their daily life and in the way they relate to each other and the way they all relate to nature. "Environment is our way to relate with nature" (Equipo Maíz 4). This way of life makes possible the creation of an alternative community development process, where community is more than just people and their economic aspects. It is about people intrinsically interconnected with their different environments, their culture, history, and roots. Research participants are economically poor and perhaps will never be economically rich. Their successfulness in community development will be to get as many people as they can working together for a present and a future for all, using only the natural resources needed to live happily and healthily, using nature with respect and protecting it from extinction.

EPAR made it possible to explore the survival of Indigenous Knowledge in a mixed culture in El Salvador. It allowed participants to interrelate complementing

spiritual and material actions. It facilitated the interconnection of different participants: NGOs, community organisations, supporters, and farmers. It also allowed the interconnection between traditional and new knowledge and between people in the North and people in the South, facilitating the interchange of knowledge and experience, while emphasizing the need to understand interactions within the specific socio-cultural contexts. “No two societies perceive or act upon environments in precisely the same ways. And, in the same way that environmental settings vary, cultures present great differences where people have no linguistic or historic connections.” (Lewis 10). People’s indigenous agricultural knowledge, biodiversity, and culture are all crucial to the development of the community in a sustainable way. EPAR helped people to acknowledge their own identity, develop new capacities, and empower themselves to have a true desire and plan to make the changes necessary for improving their current living conditions.

Combining both the IK and EPAR during the research process, we have explored the development of a new research model that will facilitate food production, income generation, and environmental protection for Salvadoran families. This will enable them to create healthy ecosystems and to sustain their individual, family, and community development by using locally appropriate agricultural resources and knowledge.

## BIBLIOGRAPHY

- Berkes, F. (1999). *Sacred ecology: Traditional ecological knowledge and resource management*. United States: Taylor & Francis.
- Davis, C. (2000). *Natural dyes and dyeing in San Juan La Laguna*. (Thesis for M.A., University of Alberta, 2000).
- De Souza, J. (1988). "A perspective on participatory research in Latin America". *Convergence*. XX1 (2/3). 29-36.
- Equipo Maíz. (1995). *Historia de El Salvador de como los guanacos no sucumbieron a los infames ultrajes de los Españoles, criollos, gringos y otras plagas*. El Salvador: Equipo Maíz.
- Equipo Maíz (2000). *Con el agua hasta el cuello que trata del más desastroso de los desastres y de cómo ponerle un remedio sustantable*. El Salvador: Equipo Maíz.
- Gibson N., Gibson G., & Macaulay AC. (In press). *Community-based research: Negotiating agendas and evaluating outcomes*. In Morse J, Kuzel AJ Eds. *The Nature of Qualitative Evidence*. Thousand Oaks: Sage
- Gibson N, & Gibson G. (1999). *Articulating the agendas: negotiating a collaborative model for public health research*. In Wall D, Ed. *Securing Northern Futures: Developing research partnerships*. Edmonton: The Canadian Circumpolar Institute. Occasional Publication (45) 109-114.
- Grenier, L. (1998). *Working with Indigenous Knowledge as a guide for researchers*. Ottawa: IDRC.
- Hammersley, M. & Atkinson, P. (1995). *Ethnography: principles in practice*. (2<sup>nd</sup>. Ed.). London & New York: Routledge.
- Keating, N., Fast, J., Connidis, I., Penning, M., & Keefe, J. (1997), *Bridging policy and research in eldercare*. *Canadian Journal on Aging/Canadian Public Policy*. (1997). Suppl., 22-41. Alberta:
- Lewis, H. (1993). *Traditional biological knowledge: wisdom for sustainable development*. N.M. Williams and G. Baires (eds.). Center for Resource and Initial Studies. Australian National University.
- Rothe, P. (unpublished). *Injury control and qualitative research: the search for reasons*. (draft, 1999). Alberta.

Sillitoe, P. (1998). *Current Anthropology*, vol 39, No. 2 April 1998: The Wenner-Gren Foundation for Anthropological research.

Smith, S., Willms, D. and Johnson, N. (1997) *Nurtured by Knowledge: Learning to Do Participatory Action-Research*. (1<sup>st</sup>. ed.). New York: The Apex Press.

Sontag, M. S. & Bubolz, M. (1988). "A human ecological perspective for integration in home Economics". In Bordan, Richard, J. and Jamiern J. (1998). *Human ecology: research and applications*. Ed. Maryland: Society of Human Ecology.