

Received: 02/08/2019

Accepted: 09/26/2020

COLLECTIVE CAPACITIES FOR THE HANDLING AND USE OF FAMILY ORCHARDS IN EL CARMEN, MEXICO

CAPACIDADES COLECTIVAS PARA EL MANEJO Y APROVECHAMIENTO DE LOS HUERTOS FAMILIARES EN EL CARMEN, MÉXICO

Jenny Castaño-Martínez¹
Jesús Gastón Gutiérrez-Cedillo²
Carlos Alberto Pérez-Ramírez³

Abstract

The active participation of society in rural communities is part of the path to improve the living conditions of the population and preserve family gardens. Given this, the collective capacities of a group of women who own family gardens in El Carmen, State of Mexico are analyzed, as well as the contribution that emerges from local initiatives developed by them. It is a qualitative research, based on the application of 15 questionnaires addressed to the members of the group and that have a family garden. In addition to working under Participatory Action Research (IAP) in three participatory workshops. In this sense, it is concluded that collective capacities favor the management, care and use of family gardens, these being an initiative for local development. For this, the formation of a solid participatory process is necessary, where the actors, in addition to sharing the geographical space, generate links and organize themselves to generate dynamics for the benefit of the population.

Keywords: Family orchards. Collective capacities. Sustainability strategies

Resumen

El estudio tuvo como objetivo analizar las capacidades colectivas de los dueños de huertos familiares en El Carmen, Estado de México. Los huertos familiares son un agro ecosistema adoptado por las poblaciones rurales como estrategia de sustento. Para ello se retoma el enfoque de las capacidades colectivas de organización, instrumentación y sistémicas que han desarrollado las comunidades para la conservación de esta tradición agroecológica. La investigación contempló la caracterización socioeconómica de la localidad, la caracterización agroecológica de los huertos familiares, la

¹ Graduate student of Environmental Sciences at the Autonomous University of the State of Mexico, Toluca, State of Mexico, MX. E-mail: jena_n_y@hotmail.com

² PhD in Agricultural Sciences and Natural Resources. Full Time Researcher Professor at the Faculty of Geography of the Autonomous University of the State of Mexico, Toluca, State of Mexico, MX. E-mail: jggc3121@yahoo.com.mx

³ PhD in Environmental Sciences. Full Time Researcher Professor at the Faculty of Urban and Regional Planning of the Autonomous University of the State of Mexico. Toluca, State of Mexico, MX. E-mail: caperezr@uaemex.mx

identificación y análisis de las capacidades colectivas. De esta manera, se concluye que las capacidades colectivas pueden favorecer al manejo y conservación de los huertos, al ser una alternativa para alcanzar el desarrollo local de las localidades rurales bajo una constante participación y organización social.

Palabras clave: Huertos familiares. Capacidades colectivas. Estrategias de sustento.

Introduction

Rural communities in Mexico live in conditions of poverty, marginalization and lack of opportunities for full integration and community development. In addition, they face the degradation and loss of biological diversity, as factors related to the current environmental complexity. However, despite the circumstances they face, they have managed to develop adaptation strategies to meet their basic food needs, through ancestral knowledge and skills of relationship, ownership and circulation of information, which are revealed in local initiatives built individually. or collective, to transform their environment and adapt to the circumstances they face (Cano, 2015; Long, 2007).

One of these adaptive strategies are family orchards, which are complex natural systems, mostly present within rural communities, where they can self-supply with food and other goods during the year (Colín et al., 2012; Hernández-Ruiz et al., 2013 and Sol-Sánchez et al., 2016). Likewise, they provide environmental, social, cultural and economic goods and services for their owners, neighbors, and surrounding communities (Raya, 2006; Mariaca, 2012; Heckert, 2014; Cruz, 2016; Calvet-Mir et al., 2014; García et al. ., 2016) becoming important spaces for each region (Cano, 2015; García et al., 2016; Sol-Sánchez et al., 2016; Castillo-Camacho, 2017).

In this way, the conservation of family orchards is a priority issue, because it not only favors the food security of the regions, but also, because it protects part of the culture, identity and traditions of the families, becoming a means exchange of knowledge, know and behaviors of society.

A central element for the conservation of family gardens corresponds to collective participation. In other words, rural communities are characterized by establishing social relationships through family-neighborhood coexistence. In them, local experiences are developed; which allow expanding productive alternatives through the exchange of information and communication between the actors. These interactions correspond to collective capacities, considered as: an instrument that encourages the community to improve its quality of life, based on local development (Vargas, 2006; Dubois-Migoya, 2008; Reyes-Morel, 2008; Pimentel- Equihua et al., 2012; Cross C., 2014).

The concept of collective capacities proposed for the analysis of family orchards corresponds to the one that considers capacities as the ability to behave, to fulfill a function or task and / or to achieve an objective. That is, an agency ability, considering both the notion of capacity and that of equal resources. Which are inherent to society and become more solid as the organization and joint work grows, seeking a common goal (Vargas, 2006).

Thus, actions, skills and resources are innate to society, based on three aspects: organization around a common goal, of permanent improvement of the living conditions of the local society; the generation of adequate and useful instruments to achieve the stated objective, and the knowledge and vision that the local sphere maintains in a broader context, which is that of globalization. Hence, this contribution is resumed to understand how the participation of society, in this case the families that own the orchards, positively or negatively influence the conservation of these agroecosystems.

To carry out this analysis, the following sections describe the methodology used followed by a section where El Carmen case study is presented. Afterwards, the socioeconomic characterization of the study area, and of the agroecosystems, the description of the collective capacities of the owners of family gardens as a conservation strategy of agroecosystems, based on organizational, instrumental and systemic capacities. Finally, the discussion and conclusions of the research are presented.

Methodology

With the intention of analyzing the collective capacities present in the owners of family orchards, the research included a review of documentary information, regarding theoretical, methodological and conceptual contributions that allowed their analysis.

The study was carried out in El Carmen, a community located in the municipality of Tenancingo, in the south of the State of Mexico. The field work was carried out in a period from May to August 2018. The choice of the area under analysis consider aspects related to: the location within an ecological transition zone, the existence of family orchards and the active participation of holders of these agroecosystems.

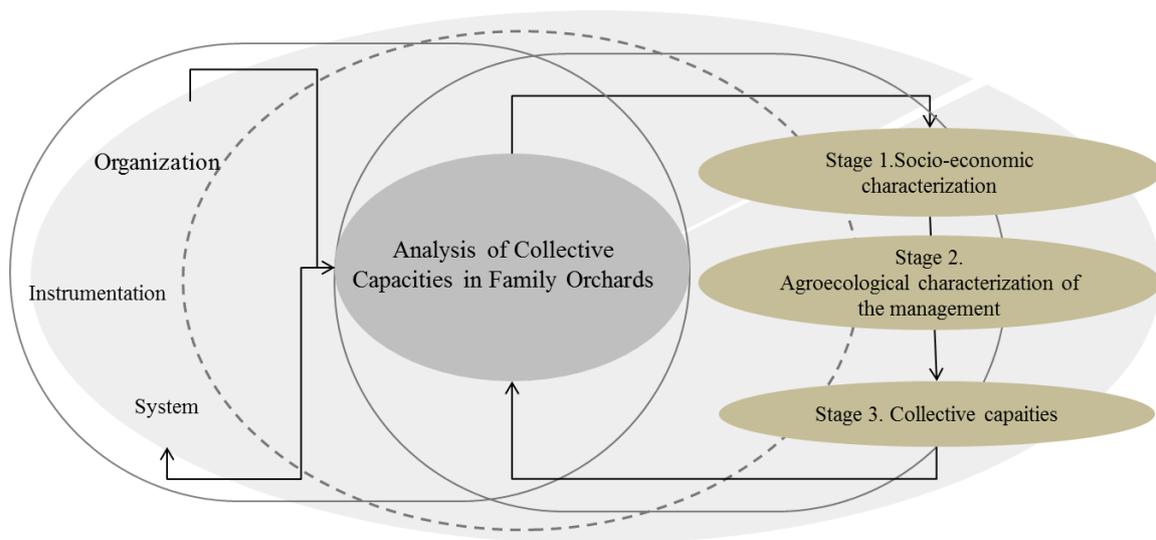
Three stages were considered: 1) Socio-economic characterization of the locality under study, where information found in scientific texts of the area and adjacent territories was analyzed; 2) Agroecological characterization of the management, use and benefits of family orchards. In this stage, previous research carried out within the locality was used (Camacho-Sanabria, 2017; González-Jiménez, et al., 2017; Juan, et al., 2017; García, et al., 2016a; García, et al., 2016b; García, et al., 2016c; Ramírez, 2008; Juan-Pérez, et al., 2004), and they were carried out semi-structured interviews taking up some variables analyzed by García et al., (2016), within them were included: components of the orchards, division of labor, time dedicated, techniques applied, products used and final destination; the variable were verified means by direct observation in the field.

Finally, stage 3) consisted of the analysis of the collective capacities and dynamics of the owners of the agroecosystems. The above was carried out from the approach of Vargas (2006), who considers collective capacities as those abilities that collective beings have, to achieve a common goal. It considers three important elements: the organization under a common objective, to improve the living conditions of society; the generation of feasible instruments to achieve this objective; and the vision of the impact that maintains the local scope in a broader context (Figure 1). The Research-Action-Participatory approach was applied in three participatory workshops (Ander-Egg, 2003).

Based on these approaches, the instruments for field research were designed. During the work in the locality, 15 semi-structured questionnaires were applied. eight visits were carried out distributed in that time, in order to apply the instruments, and carry out three participatory workshops. In addition was realized a final session to conclude the fieldwork, thank the people involved and for presenting the results of the research. The questionnaires were applied to persons who own home gardens, considering variables such as: components of the orchard, destination of the products, maintenance activities, time, applied techniques, expenses and persistent parts.

Regarding the participatory workshops, they were realized under the Research-Action-Participative approach (Ander-Egg, 2003). In the first workshop, a socio-environmental map was obtained, to know general aspects and distribution of family orchards. Within this workshop, the importance and benefits obtained from agroecosystems were highlighted. The above was complemented with the information obtained with the application of the questionnaire. In the second workshop, the exchange networks generated between the owners of family orchards, and their collective capacities, were recognized.

The third workshop allowed to identify the relationships established between the actors (owners of family orchards), their community and institutions in order to recognize the importance of these factors along the decision-making and community development processes, regarding family orchards. For the analysis of the information about collective capacities, the Likert scale was used, with which five levels were weighted about the presence or absence of collective capacities within the localities.

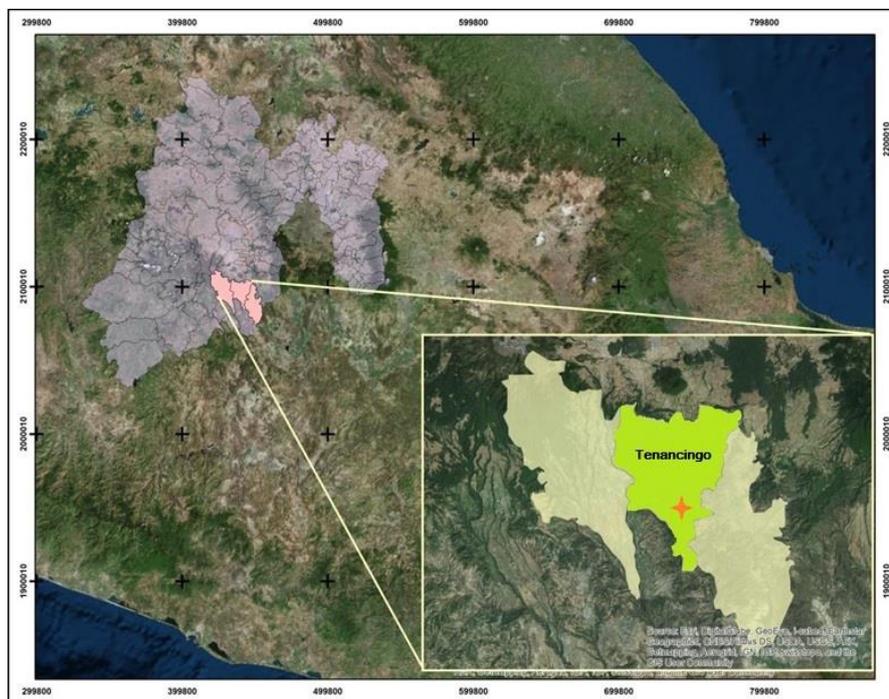
Figure 1: Methodological Approach

Source: Own elaboration, based on Vargas (2006).

Results

Socioeconomic characterization of the studied locality

The town El Carmen is located in the municipality of Tenancingo, State of Mexico. It limits to the north with San Nicolás and Tenería, to the south with San Pablo, to the east with Pachuquilla and the Municipality of Malinalco, and to the west with Acatzingo and the municipality of Zumpahuacan (Figure 2).

Figure 2: Location, El Carmen State of Mexico.

Source: Own elaboration, taken up in González-Jiménez et al. (2015)

In the area there are observed various types of vegetation, which are associated with a warm humid climate with rains all year round, and a warm humid one with abundant rains in summer; it is present an association of pine-oak forest, mainly shrubs and epiphytes (Rzedowski, 2006). Within

the community is located the Desierto del Carmen or Nixcongo National Park, this park belongs to the category of natural sites, of the national parks and flora and fauna reserves and national park subtype. The decree was issued on October 10, 1942, under the government of Manuel Ávila Camacho, Constitutional President of the United Mexican States (Molina, 2013).

It has a population of 1,032 inhabitants, of which 51% are men and 49% women (INEGI, 2010) - The cultural nucleus of the population is mainly related to agricultural activities, construction and commerce; to a lesser extent by professionals, salaried workers and very little related to migration. Agriculture is mainly related to the production of corn, tomato and avocado. The trade includes food services and processed products (jams, preserves, liqueurs and ates, among others) on weekends, holidays, and religious festivities in the town. These goods and services are obtained from the direct or indirect use of natural systems or family production units located near the homes, facilitating their care and direct use.

According to the marginalization index established by the Ministry of Social Development (SEDESOL, 2010), El Carmen is considered a town with a high degree of marginalization and a medium social lag which is demonstrated by variables of housing and services within it. Homes with dirt floors (13.78%), lack of drainage service (60%), lack of electricity (1.79%), lack of drinking water (22.42%) and homes without toilet (7.82%).

For this reason, the problem of drainage services and drinking water services stands out (INEGI, 2010). The latter receives the supply once a week. In this sense, the inhabitants identify five water wells (Magdalena, Barranca, Manantial, Canoas and Tanque), of which four are used to supply drinking water to the population and one is for other uses, highlighting community laundry issues.

Female entrepreneurship: case study El Carmen women's group

The organization of the women's group began in 2002, in response to the invitation of Autonomous University of Chapingo researchers in response to the community project aimed at combating water supply problems in the area. The initiative consisted of providing advice for the construction of ferrocement tanks, for this, they invited the population to participate in a course on the development of such systems. Attendance at counseling was mostly female because the hours established for instruction coincided with the hours worked by men. This fact did not prevent the women from attending because the absence of water mainly it affects them, because they are responsible for the home.

Faced with this situation, some women began to gather interested in receiving counseling. Some time later, a group of women was formed and with the necessary knowledge, they became advisers for the construction of new cisterns with neighbors and neighboring communities, this gave them security and enthusiasm to continue learning. Invitations were constantly being extended to more women in their community, this way they got increasing the number of people in her group and ensuring the support provided by other instances, derived from their level of organization. At the beginning, the response was favorable in two ways. First, the group that initially consisted of ten people increased to double its size and as a consequence, the support received was more constant.

After these successes, they began to receive advice aimed at the implementation and recovery of family orchards, through the Strategic Food Security Project component (PESA 2015), from the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA). They also received support related to the extension program of the same institution, through consultancies and workshops that allowed families and local producers to develop their capacities. The group of women learned not only to transform the products of the orchards, but also to add value to them.

In addition to the training received, the group also received other types of advice such as: self-esteem and leadership. With which, they felt motivated and with greater enthusiasm to continue with their orchards and their transformation. Once their entrepreneurial capacity was more established, invitations to different agri-food events began to arrive. These events were held in different municipalities of the State of Mexico, in addition to other States of the Republic. At this stage the group decided to experiment with group marketing within their locality.

For a year, every Sunday the women sold their products, for this, they kept track of the attendance of each one (they rotated every weekend), of the products brought and the products sold. On weekends they met and shared the profits. However, they did not continue with this activity due to different factors; On the one hand, the gains were not great and they had to be distributed among all, the absences also began due to the limited availability of time. Given this fact, conflicts began to

emerge, highlighting the inequality regarding the unequal dedication of time of some women and the distribution of the profits between all of them. Likewise, desertions began in the face of a scenario where time and constant investment were required for the production and for attending events outside the locality.

Currently the group is integrated up of seven women. Meeting days are Friday of each week. This day is used to share information about access to other consultancies, for the exchange of knowledge or to receive training. The most recent consultancies are related with the production of food for self-consumption and marketing of surpluses that contribute to the family economy. These consultancies were offered by the Horta DIF program of the Government of the State of Mexico, through the Municipal Institute of Integral Development for the Family (DIF). They also received advice about the management and care of family orchards and the vegetable cropping, highlighting: preparation of organic fertilizers, the correct way to reproduce new plants and seed selection. This last advice was provided by the Autonomous University of the State of Mexico, and the Institute for Agricultural, Aquaculture and Forestry Research and Training (ICAMEX).

Agroecological characterization of the management, uses and benefits of family orchards

Family orchards are a traditional production system that provides goods and services for families survive. Its structure, form and function are oriented to the needs and conditions of each holder (Mariaca, 2012). Likewise, determined by climatic, historical, socio-cultural and economic factors. In this way, it is important to know the management activities of orchards carried out by their owners, to understand the relationships between them and the traditional production systems. This study considers for its analysis the components, destination of the products, maintenance activities, time, applied techniques, expenses and persistent components (García et al., 2016).

Within the studied locality, the composition of the family orchards presents and most abundant are integrated by the in front house, a patio in the back, where the tank or ferrocement cistern is located, around ornamental, medicinal and aromatic plants are located in the courtyard and in the house, as well as a small area of vegetables sown directly on the ground or in reusable materials such as tires, tubs, pots or plastic containers.

The production of vegetables is used mainly for food preparation, thereby avoiding its purchase and reducing household expenses. Likewise, those holders who own a variety of vegetables have the ability to put surpluses on sale, thereby generating extra income for families. On the other hand, the orchards where there are farm animals are characterized by increasing and maintaining their diversity, in response to the benefits obtained from the capacity for self-sufficiency and sale.

The majority of family orchards coincide in allocating their harvest for three purposes: 1) self-consumption, 2) sale and 3) exchange. Its use can be direct, or after having undergone some process. It is, the former are those that do not need a transformation to be sold, traded or self-consumed (fruits, animals -mainly poultry- and aromatic plants). Regarding the latter, they are those that receive added value, among which are included: jams, popsicles, oils, canned fruits or canned vegetables and pine needles crafts among others. These products are mostly the result of the raw material obtained from the orchards they own. The ocoxal is a foliage in needle-like shapes arranged individually or in fascicles of 3 to 5 leaves that go from 2 to 12 cm long (Ceballos et al., 2009).

Regarding the traditional maintenance activities in the town, these include: tree pruning, preparation and application of organic fertilizers, pest control in an alternative way. As well as plant reproduction, cleaning the orchards, watering, weeding and liming. These activities are carried out by the heads of the family, women who mainly carry out the activities, with support of husbands and children to a lesser extent.

In this sense, the dedicated time to carry out maintenance activities is considerably related to the components, size and year season. That is, those made up of small plants (ornamental, medicinal, aromatic), the dedicated time is less, compared to those where there is the presence of animals and fruit trees, since the demand for time required for their care is greater.

Between maintenance activities, alternatives developed by people also stand out, whether for pest control, fertilizer or soil nutrition, and erosion control. For example, they use lime, garlic mixture, and also ash mixed with animal manure and soil. Besides the use of vermicompost leachate; There are also those who handle litter as compost by depositing it under trees or plants; For erosion

control they use living fences, inert material settled (dry branches resulting from cleaning or maintenance activities) and buried plastic bottles.

The expenses generated for maintaining a family orchard are minimal, because people adopt infrastructure or use material that is within their reach and with low cost, to be used within the orchard; for example the reuse of materials for fences, containers for growing plants, irrigation systems, harvesting products and even for the production of natural fumigants. However, they also depend on the components that make it up; those where there are spaces for vegetables, farm animals and even fruit trees tend to increase costs by keeping these spaces in good condition, whether it is in the purchase of wire mesh, cloth and even irrigation systems.

The persistent elements in family orchards are related to the benefits obtained by their owners, the time dedicated to them and the available space. This town is characterized by including within orchards a space for growing vegetables as one of the main components, because from there is obtained extra income, or they are occupied for food preparation, thus reducing household expenses. Likewise, the rest of the components such as patio or corridor, the cistern or corrals complement the orchards present in the area (Figure 3).

Figure 3: Vegetables within Family Orchards



Source: Own image, field work May-August 2018.

For this reason, its management reflects not only the identity, traditions and customs of each region, but is also part of the collective capacities that the owners of these agroecosystems develop and strengthen through social relationships, and with the natural environment as livelihood strategies, hence the importance of understanding the collective capacities involved in the conservation of family gardens.

Collective capacities of the owners of the Family Gardens in El Carmen

For the analysis of the owners of family gardens collective capacities, the contribution of Vargas (2006) is retaken, who considers them as the management skills inherent in society to achieve a goal. In such a way that they become more solid as their organization and joint work grows. These capacities are developed based on three aspects: organization, instrumentation and systemic vision. Thus, the conceptualization is approached through the study of a group of women in El Carmen, who have acquired certain knowledge related to the care and maintenance of orchards. Thus, they have become the actors of their own growth, adapting programs and projects from their vision and needs.

a) Organizational capacity

Organizational capacity corresponds to the actions, skills and resources possibility of the families that own family orchards to generate their own initiatives (Vargas, 2006). In this sense,

within the town of El Carmen, the organized work of a seven women group stands out, each of whom owns a family orchard. They have been working since 2002 as a non-formal association, free of responsibility, assuming leadership and management positions. Since then, their vision about what they own, either individually or collectively, has changed. The group of women considers the valuation of the goods and services offered by these agroecosystems to be of great environmental relevance.

The organization, as mentioned by Vargas (2006), is determined by joint work under a common objective that allows local stability. In this sense, the group of women have the vision of making their community known, not only for being a tourist destination, but also for the handicrafts and processed products that they offer. For this, the group has acquired new knowledge regarding the orchard care and products processing; based on workshops and courses aimed to the management and care of vegetables, highlighting: preparation of organic fertilizers, the correct way to grow new plants and seeds selection. Regarding processed products stand out jams, preserves, oils, liqueurs and ocoxal crafts elaboration (Figure 4).

Figure 4: Products processed by the members of family orchards



Source: Own image, field work May-August 2018.

This type of consultancy mostly managed by the group independently, however, the arrival of support from the Autonomous University of Chapingo was the basement to start the joint project. At the beginning, they were supported for the construction of ferrocement cisterns, with which, they not only generated knowledge to combat the lack of water in town, but also favored group initiative, strengthening relations between women.

In this way, their organizational capacity is governed by three important components: an initiative that allows them to come out of home, feel part of something important and generate an alternative to livelihood for their families. The organizational capacity is also reflected when making the decision to form a group together, either to receive workshops or training, and also to put their knowledge into practice, such as the production and transformation of products obtained from the orchards. With which, not only added value is given to the products, but also an alternative to support their homes, in addition to the distraction and well-being generated with these activities.

Likewise, the group response regarding attendance at agri-food fairs also reflects the ability and skills to organize among them, because they make the decision to leave a known environment and face new contexts that make them consolidate their independence, outlining security of what they do, produce and sell. As a work group, the organizational capacity is strong, considering the skill and concern to learn and put what has been acquired into practice.

b) Instrumental capacity

This capacity refers to the possibilities and abilities of society to generate the instruments that allow them to achieve the local development objectives they seek. Such instruments are grouped into four headings: planning, agreement, management and communication. The former refers to the

elaboration of projects that articulate the interests of the families that own family orchards to achieve their objectives; those referred to agreement are related with establishing interests and initiatives; those of management allow access to resources and political-administrative and private instances necessary for the achievement of their objectives; and finally communication, as it makes possible the dissemination of the achievements, as well as the feedback for the project.

Thus, the instrumental capacity is reflected first in the capacity and abilities to gather. These meetings are held on Friday of each week when they are more willing to attend. In them, it is planned to schedule trainings or talks, in addition to proposing support options to which they can access. These result from invitations or by found out on their own initiative, being the reflection of those relationships and links between people.

In this way, the continuous training that the group has received also reflects its instrumental capacity. Among the public organizations that have made it possible to consolidate their knowledge have been: Secretary of Social Development, the Strategic Food Security Project component (PESA 2015) of the Secretary of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA). In addition to receiving support related to the extension program of the same institution, based on consultancies and workshops in the locality that allow the development of families and producers capacities.

Likewise, the production of food for self-consumption and possible commercialization of surpluses that contribute to the family economy are promoted by HortaDIF, a program aimed to food production for self-consumption and commercialization of the Government of the State of Mexico, through Integral Development for the Municipal family (DIF). In addition to the intervention by the Autonomous University of the State of Mexico, through consultancies on family orchards in general and, on the production of vegetables in particular.

This type of training develops in women greater knowledge about family orchards, their importance either as a microecosystem due to the goods and services it offers, but also as a system that can generate economic good for families, through the care and processing of the orchard products. In this way, the skills acquired by the group of women have allowed them to give added value to their products, turning them into an alternative source of income that helps reduce household expenses.

In addition, it manages to empower women, by having the possibility of sharing their knowledge, either with other people from the same town or neighboring towns and feeling important and recognized. About the dissemination of the achievements, which is another characteristic of the instrumental capacity, it can be seen reflected in the attendance to agri-food events, since when attending it allows to know on the one hand the products made by them in other communities and states, but also indirectly to their municipality and locality.

c) Systemic capacity

The systemic capacity refers to the possibilities and abilities of the actors to understand their positioning in a broader context, highlighting the links with other actors and the access and use of technology to promote local development (Vargas, 2006). In this sense, the group of women within the town and owners of family orchards have been participated in agri-food events, where they have been related to people from different municipalities; whether they are political, scientific and business actors.

The above has made it possible to strengthen their relationship, leadership, and organization skills; in addition to generating links with other communities, regarding experiences, knowledge or sales. Among the main exhibitions and fairs that the group of women have visited are those of municipalities such as: Tenancingo (center closer to El Carmen Convent), Malinalco, Coatepec Harinas, Zumpahuacan, Toluca and Temoaya, located in the State of Mexico and in other municipalities such as Irapuato and Tuxtla Gutiérrez, located at the States of Guanajuato and Chiapas (approximate distance 270 and 922 km from the State of Mexico respectively).

This type of relationships and links between artisan people has favored their relationship skills, by giving a broader view when knowing similar experiences of female entrepreneurs. In addition, within government agencies it also favors their relationship by developing links and thus being known in the region; in this way the group has managed to be invited to other cultural events. These actions correspond to their own initiatives that they have achieved as part of their management and relationship skills. In addition to achieving internal links in the locality, producer

networks are formed indirectly, that is, the group of women having relationships either of products exchange, knowledge or of a common vision, they build interactions of interests between them.

Discussion

At domestic family unit level, social forms can be identified as part of population local dynamics, these have been the basis for guiding the permanence of family orchards up to the present time. It is through the capacities of individuals that denote abilities to improve the quality of family and collective life, as indicated by Vargas (2006), Long (2007), Krishnamurthy et al., (2017), and Acosta et al., (2016), these authors consider that existing relationships can contribute to solving problems. Similarly, Long (2007), Krishnamurthy et al., (2017), and Acosta et al., (2016) they point out that these skills facilitate and guide towards local development.

Based on participatory-action research, it was possible to show the active participation of the women's group. It was possible to recognize the trajectory about the organization process, their responsibility as women generators of the solutions to their own conflicts and the capacity they have individually and collectively, as Garzón, B., et al., (2014); Villanueva-González, (2014); Franco-Valencia et al., (2018), they point out, by indicating that participatory action-research, allows to improve individual capacities and abilities, as well as, to promote protagonism aimed at their own development, and therefore, the autonomous development of the locality, due to that they are the local actors who possess knowledge of their environment.

The collective capacities identified in the owners of the family orchards made it possible to know under what objective of the joint initiative they work, and if this is to make their place of origin known as a site with artisan and tourist representation, and at the same time generate alternative economic resources for the individual and family support of each member of the group, as noted by Pasquier-Merino (2014), because is an employment alternative, where the insertion of women is a priority. In contrast, Krishnamurthy et al., (2017), consider that this type of social groups, could cause a detachment from family management of family orchards, caused by alterations regarding yield and production, to form part of a broader market.

This study also reflects the skills to establish meeting cycles, where women they plan, exchange and receive training. Also, there is an exchange of knowledge between the members of the group or third parties, as stated by Vargas (2006); Long (2007); Reyes-Morel (2008) and Mujica et al., (2013), as it is a reflection of those relationships and bonds between people over time, as well as female empowerment. So, local initiatives allow them to generate a sense of belonging within their locality by being recognized and valued women. With which it ensures the development of successful projects managed by its own population.

Conclusions

Social participation within family orchards is essential for their permanence, since it not only favors relationships to obtain products, but also reflects interactions between the different owners of orchards, managing to establish networks of producers at the family and neighborhood level. Communication corresponds to a capacity or ability well managed by the group, which has contributed to decision-making towards its growth and access to different media.

The prevailing collective capacities within the group are strong, since they have a vision of escalation directed to seeking personal and family subsistence alternatives, even when they face factors that slow down their growth. This fact strengthens their collective capacities, as the women of the group are the ones who have the necessary skills to continue within the production processes despite the present obstacles. In this sense, local development can be achieved through the formation of a solid participatory process, where the actors, in addition to sharing the geographical space, establish links and organize themselves to generate dynamics for the benefit of the population.

References

ACOSTA, L.; GARCÍA, O.; DUBOIS, A. Las capacidades colectivas como un instrumento metodológico para la evaluación del bienestar humano en territorios indígenas del Amazonas colombiano. *Mundo Amazónico*. v. 7, n.1-2. p. 5-30, 2016. Rescatado de <http://dx.doi.org/10.15446/ma.v7.54452>

ANDER-EGG, E. Repensando la Investigación-Acción Participativa. Editorial Lumen Hvmánitas. p. 32-61, 2003.

CALVET-MIR, L.; GARNATJE, T.; PARADA, M.; VALLÉS, J.; REYES-GARCÍA, V. Más allá de la producción de alimentos: los huertos familiares como reservorios de diversidad biocultural. *Ambienta. Agricultura familiar y huertos urbanos*. España, n.107, p. 40-53, 2014. Rescatado de [http://icta.uab.cat/etnoecologia/Docs/\[411\]-calvet.pdf](http://icta.uab.cat/etnoecologia/Docs/[411]-calvet.pdf)

CAMACHO-SANABRIA, R.; CAMACHO-SANABRIA, J.; BALDERAS-PLATA, M.; SÁNCHEZ-LÓPEZ, M. Cambios de cobertura y uso de suelo: estudio de caso en Progreso Hidalgo, Estado de México Madera y Bosques, 23 (3). pp. 39-60, 2017.

CANO, C. Huertos Familiares: Un Camino Hacia La Soberanía Alimentaria. *Revista Pueblos y Frontera Digital*. México. v. 10, n. 20, p. 70-91, 2015. Rescatado de <https://www.redalyc.org/pdf/906/90643038004.pdf>

CASTILLO-CAMACHO, E. Huerto Familiar como Estrategia Ambiental para Promover el Desarrollo Sustentable con Representantes. *Revista Scientific Venezuela*. v. 2, n.4, p. 106-126, 2017. Rescatado de http://www.indteca.com/ojs/index.php/Revista_Scientific/article/view/95

CEBALLOS, G.; LIST, R.; GARDUÑO, G.; LÓPEZ, C.; MUÑOZCAÑO, M.; COLLADO, E.; SAN ROMÁN, J. La biodiversidad del Estado de México, 2009. Rescatado de <https://www.biodiversidad.gob.mx/region/EEB/pdf/FinalBiodivEdoMexweb.pdf>,

COLÍN, H.; HERNÁNDEZ, A.; RAFAEL M. El manejo tradicional y agroecológico en un huerto familiar de México, como ejemplo de sostenibilidad. *Etnobiología*, v. 10, n. 2, p. 12-28, 2012. Rescatado de <https://dialnet.unirioja.es/descarga/articulo/5294478.pdf>

CONSEJO NACIONAL DE EVALUACIÓN DE LA POLÍTICA DE DESARROLLO SOCIAL. Historia de los programas sociales a través de sus indicadores. Diagnóstico de la permanencia de indicadores 2008-2016. Ciudad de México: CONEVAL, 2017. Rescatado de <https://www.coneval.org.mx/InformesPublicaciones/Documents/Historia-de-los-Programas-Sociales.pdf>

CROSS, C. Organizarse, trabajar y luchar: políticas sociales focalizadas y la construcción de capacidades colectivas en una organización territorial de Buenos Aires. *Memorias*, v. 12, n. 21, p. 55-72, 2014. Rescatado de <https://core.ac.uk/download/pdf/81669343.pdf>

CRUZ, L. El papel de las mujeres en los huertos familiares. *Alternativas en Psicología*. n. 36. p. 46-60, 2016. Rescatado de <https://www.alternativas.me/attachments/article/134/El%20papel%20de%20las%20mujeres%20en%20los%20huertos%20familiares.pdf>

DUBOIS-MIGOYA. El debate sobre el enfoque de las capacidades: las capacidades colectivas. *Araucaria. Revista Iberoamericana de Filosofía Política y Humanidades*. Instituto Hegoa UPV/EHU, España. v. 10, n. 20, p. 35-63, 2008. Rescatado de <https://www.redalyc.org/pdf/282/28212043003.pdf>

FRANCO-VALENCIA, MARCO HELI, & PRAGER, MARINA SÁNCHEZ DE. Plan de vida del resguardo indígena de Yaquivá del municipio de Inzá, Cauca, Colombia, desde la perspectiva de la agroecología. *Agronomía Colombiana*, 36(2), 143-151, 2018, Rescatado de <https://dx.doi.org/10.15446/agron.colomb.v36n2.71996>

GARCÍA, J. C; GUTIÉRREZ, J. G; BALDERAS, M. Á Y ARÁUJO, M. 'Livelihood Strategy In The Rural Area Of The Mexican Central Highlands: The Family Vegetable Garden', *Agricultura, Sociedad y D*, pp. 621-64, 2016a.

- GARCÍA, J.; GUTIÉRREZ, J.; BALDERAS, M.Y ARAÚJO, M. Sociocultural and environmental benefits from family orchards in the Central Highlands of Mexico', *Bois et forêts des tropiques*, n. 329, p. 29-42, 2016b. Recuperado de <http://bft.revuesonline.com>
- GARCÍA, J. C; GUTIÉRREZ, J. G; BALDERAS, M. Á Y ARAÚJO, M. 'Aprovechamiento de huertos familiares en el altiplano central mexicano 1 [use of family orchards in mexican central highlands]', *Revista mexicana de Agroecosistemas*, pp. 149-162, 2016c.
- GARZÓN, B., AUAD, A., ABELLA, M., & BRAÑES, N. La transformación del hábitat popular desde talleres integrados de investigación acción participativa. *Revista INVI*, 20(55), 2005. Rescatado de <https://revistas.uchile.cl/index.php/INVI/article/view/8726/8528>
- GONZÁLEZ-JIMÉNEZ, A. Análisis espacial de la composición florística de huertos familiares en Malinalco, Tenancingo y Villa guerrero, Estado de México. Tesis de Grado. Universidad Autónoma del Estado de México. p. 1-117, 2015.
- HECKERT, V. Planning for Abundance: Permaculture and Radical Transformation, *Theory in Action*, v. 7, n. 4, p. 97-106, 2014.
- HERNÁNDEZ-RUIZ, J.; JUÁREZ-GARCÍA, R.; HERNÁNDEZ-RUIZ, R.; HERNÁNDEZ-SILVA, N. Uso antropocéntrico de especies vegetales en los solares de San pedro Ixtlahuaca, Oaxaca México. *Ra Ximhai*. Universidad Autónoma Indígena de México Mochicahui, El Fuerte, Sinaloa v.9, n. 1, p. 99-108, 2013. Rescatado de <http://www.redalyc.org/articulo.oa?id=46127074009>
- INSTITUTO NACIONAL DE ESTADÍSTICA, GEOGRAFÍA E INFORMÁTICA (INEGI). SCINCE Web, 2010. Rescatado de <http://gaia.inegi.org.mx/scince2/viewer.html>.
- JUAN, J. Land-use change in the Sierra Madre del Sur between 2000 and 2017. The case of the community of Progreso Hidalgo, municipality of Villa Guerrero, Estado de México. *Revista de Geografía Agrícola*, núm. 59, pp. 101-126, 2017.
- JUAN-PÉREZ, J. Y MADRIGAL, D. Huertos, diversidad y alimentación en una zona de transición ecológica del estado de México *Ciencia Ergo Sum*, vol. 12, núm. 1. Pp. 54-63, 2004.
- KRISHNAMURTHY, L. R., S. KRISHNAMURTHY, I. RAJAGOPAL y A. PERALTA SOLARES. Agricultura familiar para el desarrollo rural incluyente. *Terra Latinoamericana* v. 35, n. 2, p. 135-147, 2017. Rescatado de <http://www.scielo.org.mx/pdf/tl/v35n2/2395-8030-tl-35-02-00135.pdf>
- LONG, N. Sociología del desarrollo: una perspectiva centrada en el actor.-México: Centro de Investigaciones y Estudios Superiores en Antropología Social: El Colegio de San Luis. p. 33-73, 2007.
- MARIACA, R. El huerto familiar del Sureste de México. SEMARNAT del Estado de Tabasco, Colegio de la Frontera Sur. p. 521, 2012.
- MOLINA, S. Diagnóstico de la actividad turística del Municipio de Tenancingo, Estado de México, Basado en el enfoque de planificación Estratégica. Universidad autónoma del Estado de México. p. 88, 2013.
- MUJICA, M.; SMITH, C.; CHIRINO, I.; GARCÍA, B., GUTIÉRREZ, C.; CALDERON X.; QUERO, M. Emprendimientos productivos: estrategia local en red para el desarrollo sostenible del caserío. *El Momonal*. Multiciencias. v. 13, n. 3, p. 238-250, 2013. Rescatado de <http://www.redalyc.org/articulo.oa?id=90429040004>
- PASQUIER-MERINO, A. G. La participación de los actores en iniciativas de desarrollo rural. Desigualdad y negociación en las interacciones cotidianas. Tesis Doctoral. Centro de Estudios Sociológicos Doctorado en Ciencia Social con Especialidad en Sociología, 2014. Rescatado de https://ces.colmex.mx/pdfs/tesis/tesis_avari.pdf

PIMENTEL-EQUIHUA, J.; VELÁZQUEZ-MACHUCA, M.; PALERM-VIQUEIRA, J. Capacidades locales y de gestión social para el abasto de agua doméstica en comunidades rurales del Valle de Zamora, Michoacán, México. *Agricultura, sociedad y desarrollo*. v. 9, n. 2, p. 107-12, 2012.

RAYA, E. Modelo de intervención en trabajo social comunitario. *Trabajo social comunitario*. p. 30, 2006.

REYES-MOREL, A. Comunidades de significación como capacidades colectivas. Una revisión comunitarista de la teoría de Amartya Sen. *Arete. Revista de Filosofía*. Universidad de la República, Uruguay, v. 20, n. 1, p. 137-163, 2008.

RODRÍGUEZ-GUTIÉRREZ, F. El Enfoque de las Capacidades para la Gobernabilidad del Territorio CECODET. Universidad De Oviedo. *Ería*, n. 63. p. 107-115, 2004.

RZEDOWSKI, J. Vegetación de México. Comisión Nacional para el Conocimiento y uso de la Biodiversidad. México. Pp. 504.2006.

SOL-SÁNCHEZ, Á.; BAUTISTA-GARCÍA, G; VELÁZQUEZ-MARTÍNEZ, A.; LLANDERAL-OCAMPO, T. Estructura y zona de manejo de los huertos familiares del ejido la Encrucijada, Cárdenas Tabasco. *Revista mexicana de ciencias agrícolas*. p. 2741-2756, 2016. Rescatado de <http://www.redalyc.org/articulo.oa?id=26314447400>

VARGAS, C. El desarrollo local en el contexto de la globalización. México: Editorial Instituto Nacional de Administración Pública A. C. (INAP). p. 141-182, 2006.

VILLANUEVA-GONZÁLEZ, C. E. Huertos familiares y su relación con los saberes agrícolas tradicionales, seguridad alimentaria y conservación de la agrobiodiversidad: el caso de la Aldea Seluc, San Agustín Lanquín, Alta Verapaz, Guatemala, 2014. Rescatado de <http://hdl.handle.net/11554/7145>



Esta obra está licenciada com uma Licença Creative Commons Atribuição 4.0 Internacional.