

Social Management for Food Sovereignty in Mexican Farmers: A Case Study in The Valles Region, Jalisco, Mexico

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Food sovereignty is examined to build a participatory proposal for social management for the implementation of public policies for sustainable food production. The observation unit is constituted by farmers belonging to the community of San Antonio Puerta de la Vega, municipality of Ameca, Jalisco. A semi-structured survey was used to collect quantitative data and carryout the situational diagnosis of food sovereignty; in-depth interviews with key informants were used to collect qualitative data, and ethnographic records were used to collect data on the educational intervention process. 50 families (17% of the total population) participate in the study, of which 41 (86%) produce food, mainly sugar cane and corn, using intensive techniques, agrochemicals and improved seeds for their production. The farmers established as the main solution proposal the training for organic food production with the following educational intervention axes: organic food sowing; production of organic fertilizers, creation of a native seed bank and integration of backyard animals in food production. Three strategies are proposed for the social management of the food sovereignty proposal: creation of a community school, individual transformation actions and dissemination of the topics in the community. Food sovereignty is deteriorated by the changes in the modes of production implemented, characterized by intensive production, which generate cultural and socio-environmental damage. The social management of an organic agriculture model contributes to the achievement of Food Sovereignty, through the production of organic food, with a model managed from their needs, which allows the care and recovery of natural environments.

Keywords: Food Sovereignty; Social management; Farmers; Mexico.

INTRODUCTION

The research analyzes the food sovereignty situation of the community of San Antonio Puerta de la Vega, municipality of Ameca, Jalisco, Mexico, with the purpose of building a participatory proposal of social management for the implementation of public policies for sustainable production food.

The study is based on the following premise: the food sovereignty situation in the town of San Antonio Puerta de la Vega is precarious for implementing a public policy for sustainable development, so it is important to promote a social management process to improve food production.

Members of the locality the Central Campesina Cardenista in the construction of public policies for food sovereignty, expressed in the "Declaración de Tala" (Crocker et al., 2018) which are manifested in the following strategies: respect and promote the right to health, food and sustainable biodiversity; develop extensive production models with implementation of natural processes free of agrochemicals; implement a sustainable agriculture model through the development of agroecological family farms; promote sustainable policies for the proper management of wastewater, and protect rivers, lakes and watersheds, as well as prioritize and promote the market at the local, municipal and state level with fair prices for producers and consumers. The strategies formulated are generated in a national context, where Mexico is pointed out as one of the main agricultural producing and exporting countries worldwide, making this activity the main engine for the national economy (SAGARPA, 2017). At the state level, Jalisco is considered as the agri-food giant of Mexico, as it is one of the states with the highest production in the agricultural sector, due to its contribution with more than a tenth of food production within the country (SADER, 2016).

Agricultural production in the municipalities that make up the Valles Region is important to the economy of the state and the region; however, there are health problems related to the inadequate use and sanitation of water for consumption and wastewater, the abandonment of traditional production methods and low fertility of the land used for planting due to agricultural overexploitation. The change in the modes of food production is caused by the processes of urbanization, globalization, and demographic transition, which has led to the depletion of natural resources, especially soil and water, generating a negative environmental impact, in addition to the increase in costs of production and sale of food that make up the basic food basket.

These changes are associated with changes in sustainable lifestyles.

When analyzing the state of knowledge related to the problem under study, some authors (Altieri and Nicholls, 2012) present data on the benefits of the implementation of programs and projects that managed to increase crop yields in Africa, Asia, and Latin America. One example shown in the study is Nicaragua, where, thanks to organic and sustainable production, cereal productivity increased by 95%, corn by 71% and beans by more than 100%, together with greater soil fertility, less soil wear and optimal pest control. The authors also share how, through fairs and projects such as "Semillas de Identidad" (Seeds of Identity), the genetic diversity of local native seeds was rescued and conserved through exchanges with other farmers who were able to recover 129 varieties of corn and 144 of bean seeds. In the review of the state of knowledge in the field of Social Management of Food Sovereignty, there is a lack of studies.

This research has as its theoretical foundation the Epistemology of the South described by De Sousa Santos (2011). According to the author, the Epistemologies of the South are a set of epistemologies that start from conceptualizing the "south" metaphorically and not geographically, relating the concept to the systematic suffering resulting from colonialism. This position is constituted by the claims of new production processes, in the need for scientific and non-scientific knowledge to be accepted and valued, in order to contribute to a new relationship between different types of knowledge based on the practices of classes and social groups that have suffered destruction, oppression and discrimination. Thus, a break from the idea that there is only—valid knowledge, largely produced in the global north and which is known as modern science (De Sousa Santos, 2011).

A theory close to the previous approaches is the Complexity Paradigm. For Edgar Morin (Gilson, 2017) this paradigm generates a new epistemological vision that allows the understanding of cultural, social, as well as environmental issues in an integral way, by incorporating different knowledge to build an experience between subject and society. Consequently, the interaction created by the individual will allow him to have a better adaptation to reality, and thus acquire a critical and global way of thinking to transform his society (García, 2020). For the work with the study locality, the Social Management model has been chosen, which is

defined as the process where a community acquires a collective, continuous and open learning for the design of projects that address the needs and problems of society. This model seeks that the communities acquire a position to generate development in order to free themselves and, in an organized manner, be able to negotiate with the government to invest in the resolution of their problems and needs (Pinho-De Oliveira, 2016). In Social Management, the ends are as important as the means chosen for the action. Therefore, the adoption of strategies in this model must involve the people with whom they work, seeking that the subjects gain autonomy and control over their lives. These characteristics guarantee, for humans, development and freedom (Beaumont, 2016).

The purpose of the study is to generate a sovereignty strategy for local food security that considers regional public policies and is viable in the complex context of the Mexican countryside due to the hegemony of intensive agricultural proposals.

METHODOLOGIES

A methodological design of Participatory Action Research is used in accordance with the process described by Balcázar (2003) based on the Paradigm of Complexity and the Epistemology of the South. A semi-structured survey is used to collect quantitative data for the situational diagnosis of food sovereignty. For the collection of data on the educational intervention process, the ethnographic recording technique is used, where the research team observes important data on the work process, the participation and roles of the subjects, as well as taking photographs to document the training process.

The observation unit is made up of farmers belonging to the community of San Antonio Puerta de la Vega, where a space designated by some members of the community to form a community training school is established as a place of work. The town of research is located 23 km from the municipal capital of Ameca and belongs to Hydrological Region 14 Ameca River, in the Cocula and Ameca-Pijinto hydrological basins of the State of Jalisco (State Water Commission of the State of Jalisco, 2015). It has a total population of 1,077 inhabitants, 564 of which belong to the female gender and 513 to the male gender, living in 296 dwellings (IIEG, 2019) 50 families participate in the research, constituting 17% of the total population. The information is analyzed

through a database with Microsoft Excel 2019 program. For the analysis of qualitative data, in-depth interviews were conducted with key informants. To categorize the units of analysis, a methodological conceptual matrix and support software for qualitative data analysis are used.

The evaluation of the transformation actions is carried out in a dialogue workshop, in which the subjects are interviewed to address the following topics: community school, individual transformation actions and dissemination of the topics in the community. During the workshop, all the subjects' participations are audio-recorded for later transcription and analysis of the data based on the categories.

The ethical aspects of the research are established based on Article 17 of the Regulations of the General Health Law on Health Research. The research can be classified as minimal risk, due to the fact that no procedures are used in common diagnostic physical examinations and the moderate exercise involved for the participants in the implementation of techniques to produce food (Congress of the Union, 2014). In addition, international ethical guidelines for health-related research involving human subjects are taken as a reference: "Guideline 1: Social and scientific value and respect for rights", "Guideline 4: individual benefits and risks of a research" and "Guideline 22: use of data obtained online and digital tools in health-related research" (Pan American Health Organization and Council of Organizations, 2016).

RESULTS

To evaluate the food sovereignty situation in the town of San Antonio Puerta de la Vega, Jalisco, a situational diagnosis is made with the indicators that comprise it: agroecological techniques for food production, water sources and support for the promotion of agriculture. Semi-structured surveys are carried out on people who belong to the locality. According to the information obtained, the respondents are engaged in food production, mainly sugarcane and corn crops, corresponding to 14.29%, who mention the use of intensive techniques, such as the use of agrochemicals and improved seeds for their production.

"For organic fertilizers, we need mentoring (...)" They (sic) use insecticides, I have dispensed them and it is a serious mistake (...) We get seeds externally, we buy them from companies (...) but it would be good if we produced our own seed... "

In terms of irrigation systems implemented for food production, a key informant notes that their main source of water is rainwater from the rainy season and river water for the rest of the year. However, the water sources used to irrigate crops are contaminated water from the Presa de la Vega dam, which limits the production of other crops such as vegetables.

"For sugarcane production we have had problems, because the water we use is contaminated, it comes from the Vega Dam (...) We cannot plant other products such as vegetables, we are going to make people sick because the water does not have the standards that are required ..."

In the category, support for the promotion of agriculture, it is shown that, from the surveyed participants, the total number of people do not receive any support for agriculture. One of the informants claims not to be familiar with support programs from the government or any other institution or organization:

"I do not belong to any program, I have a contract with the company, but that's as far as it goes ..."

Based on the diagnosis, a workshop is held to develop proposals to solve the problem of food production. The participants express their proposals for solutions and all workshop participants vote on the solutions based on three considerations: importance, ability to solve the problem and benefit to the community. As a result, the following proposals are made and presented in the order in which they were considered a priority: Training for organic food production; raise awareness of why it is important to produce organic food; start producing organic food and organize the community to change the modes of production to others that improve the environment. The farmers established training for organic food production as the main proposed solution, so in the first session the educational program was developed in collaboration with the community, where the following themes were prioritized: organic planting of food, production of organic fertilizers, a creation of a native seed bank and integration of backyard animals in the production of organic food.

In the second session, the basic actions for planting organic food are worked on; a dialogue workshop is held to deepen their experiences and knowledge about organic food planting, followed by feedback with theory on the subject. In addition, work is done on the adaptation of the space for planting food, all attendees participate in the practice and agreements are reached to carry out the planting of food in the

assigned space.

In the third session, the topic of organic fertilizers is addressed, explaining the importance and how the resources of their home and/or community can be used to implement them. At the end of this session, participants discuss ideas for future activities related to the irrigation of the garden and responsible water management, as well as the rotation of responsibilities and the participation of everyone in its care.

In the fourth session, we worked in a practical way on the techniques for planting food, from the removal of the soil to planting. In addition, the topic of seed conservation is discussed and some members of the group take responsibility for the seed bank and its replication. The last topic to be discussed about is the breeding of backyard animals, specifically sheep and chicken. In the first part of the workshop, a theoretical explanation is given on the importance of integrating backyard animals and the basic aspects of raising them. In the second part, the space of the community school is organized to make the barnyard where the animal raising project begins.

At the end of the educational process, the transformation actions to be worked on are established with the farmers. Three actions are specified: community school, individual transformation actions and dissemination of the topics in the community. For the evaluation of these actions, a dialogue workshop is organized where the participants are invited to open the dialogue through general questions related to the transformation actions, which will allow the evaluation of the changes obtained in the future.

The first topic of this workshop is the community school. The dialogue begins with the techniques of organic fertilizers that are based on the breeding of earthworms to produce leachates that are used as foliar, the use of feces for direct fertilizer in the plots, as well as the use of animal feces to produce compost.

In the case of worm farming, it is consolidated as a solid project in the school, so that other members of the community have been interested in creating their own project. Regarding composting, although it was taught in the workshop, it does not remain as an active project within the community school. The subjects keep animal husbandry, specifically sheep, which allows them to store the feces for later use as compost.

"People have already come for me to give them worms (...) I see that the project is successful,

because the sheep that was given to your mother is already an adult sheep, it has already reproduced and we already have four sheep here that are using the compost to fertilize their soil, isn't it? My brother is putting them aside and is bagging them ...".

The second axis of work was the planting and creation of a native seed bank, with which the plan was to continue planting, obtaining food and replicating the seeds. Although they have the tools and knowledge of the techniques, they left the seed bank neglected. They mention the high cost of drinking water in their community and the need for economic cooperation to supply this resource as an obstacle. Even so, the subjects recognize the cultural and economic importance of conserving seeds, since this practice carried out by their ancestors has as a benefit the fact of possessing seeds that allow them to continue cultivating year after year.

The last area of work was the integration of backyard animal husbandry in food production, which was a successful part of the community school, since initially there were two sheep and a lamb and now there are already offspring, in addition to contributing to the creation of fertilizer, as previously mentioned.

An important piece of information provided by the subjects is the fact that they visualize everything that was seen in the educational process as a circle, where all the elements are related to each other. They mention as an example that the harvesting of vegetables provides food for the animals and inputs to create organic fertilizers, as well as animal excrement. In both cases, the production of vegetables and backyard animals, these elements contribute to the subjects finally having a sustainable diet, as reported by an informant in the following text:

"To make the circle in the production of this vegetable, there is a lot of peel, a lot of vegetables; a lot of peel that the chicken can eat, because apart from the fact that we will obtain to make organic fertilizers, we need in the case of the hens the excrement and apart from that we will have if we are talking about a sustainable food".

Individually, each of the participants had to start creating their own project integrating the aspects that were worked on in the educational part. Thus, two of the participants started with a project that integrates animal husbandry and fertilizer production. In their discourse it can be interpreted that they know the techniques that were implemented in the course and are able to transfer them to the resources they have available to create their project.

"Look, there in the farm we have pigs (...) my

mother has pigs, chickens and hens in that corral, so we sweep the farm every day (...) my mother sees that it has many trees, it has a lot of garbage, we are throwing all the leaves into the corral and we are sweeping what we collect from the hens (...) right now we are throwing a little bit of sugar cane, so all the leaves (sic) go here where the leaves are and what we collect from the hens' poop (sic) goes here.) right now we are throwing them a little bit of cane for a change, so all that garbage (sic) goes here where the leaves are and what we collect from the chickens' poop (sic) goes to the leaves."

Another participant mentions that she also keeps in her house the production of compost with the technique used in the organic fertilizer workshop. The participant demonstrates that she has sufficient knowledge to carry out the technique, as expressed in the following story:

"I have the idea of doing that, to make the one that goes with pure vegetable peel and has pure vegetable waste that has no fat, so I remembered that I had to add the ash, add grass or something that complements the vegetables that are there and add a little tandalite (sic) of soil, add some of that fertilizer, stir it and add something sweet."

Finally, three of the project participants integrated a proposal for organic fertilizers to be used in the sugarcane planting. The woman who attended all the meetings continues to take care of the worms and collect the fertilizers, and two of the men, who occasionally attended, integrated these fertilizers into their planting and were able to observe an increase in yield at harvest time.

"It gave us a lot of yield, it increased us three more truckloads of cane, we use 10 liters of water for 1 liter of foliar (...) and we are talking about that if they keep implementing it the soil will be nourished (...) we also use compost."

In addition to continuing with the individual projects, one task that the group undertook was to disseminate what they had learned in the course to their community. The participants mention that in this process they prioritize creating their individual projects with the intention that before starting to replicate the project, they must be able to put into practice what they have learned, and then become facilitators of the learning process of someone else; they also comment that to continue with the process they have some important resources: land, water and motivation.

"But it is as you were telling us, first we have to be the example, right, to achieve, what is a medium term

purpose, I cannot say in the long term, we have the land, the water may not be very good, but we also have it and the desire too".

Something that they have done and seem to have been successful is to talk and spread what they have learned with other people in the community, thus two people showed interest in starting an organic fertilizer project with a technique that was taught as part of the course, as exemplified in the following story:

"We also talk about what we do, what we have learned, what we have of this knowledge (...) in fact, they provided a place to make piles, to start producing worms."

DISCUSSION

The analysis of food sovereignty in the community reflects that food production depends on rainfed irrigation and the use of chemical inputs for planting, in addition to the lack of support from the authorities to promote agriculture; as a result, it is a practice in the process of being abandoned by small producers.

Food sovereignty in the town of San Antonio Puerta de la Vega in the municipality of Ameca, Jalisco, has deteriorated due to changes in the modes of production with intensive processes and deliberate use of agrochemicals in crops, such as fertilizers and pesticides, among other factors. The sum of these conditions has led to a loss of food sovereignty in the community, in addition to cultural and socio-environmental damage.

These findings coincide with the research conducted by Crocker et al., in 2019 in the study region, who analyze the transition from extensive crops with agroecological techniques to produce corn, beans and squash, to intensive production of rice, corn and sugar cane, together with the use of agrochemicals in various localities of the State of Jalisco. From the Critical Theory applied to the Modes of Production, it is argued that traditional agriculture is displaced by capitalist modes of production, as an alternative to agrarian abandonment. (Oregon, 1985)

The local water sources, which are used for agricultural activities, are in a deteriorated state due to toxic waste from agro-industries, mainly sugar mills, and the lack of wastewater treatment that contaminates the surface water that drains into the region's dams. In this regard, Ongley (1997) points out that the deliberate use of contaminated water in crops can cause health problems, a situation that is

caused by the violation of socio-environmental regulations of agribusiness and the lack of environmental policies for the management of their waste in the municipalities (Cardenas, 2017).

The subjects of the researched community consider that community farming projects are an opportunity to provide food, since their production is a process that represents a high investment of resources. They believe that agroecological alternatives can reduce costs and damage to the environment, so it is proposed to train, raise awareness and organize the community to produce organic food with agroecological techniques. Crocker (2020) proposes the Intercultural Agroecological Farm Schools Model as an alternative to promote food sovereignty among farmers and sustainable production, which is taken up in the intervention proposal of this research.

For the implementation of the educational intervention to improve local food sovereignty, a Social Management process is proposed where it is pointed out that for the creation of the strategies, the people with whom we work must be involved, so, in addition to considering the data obtained, a work plan is established in collaboration with the community with an agroecological, organic and sustainable vision (Beaumont, 2016).

In the development of the educational process, theory and practice are integrated at all times and importance is given to the experiences of the participants in the project; women contributed more from their experiences in accompanying their husbands in their work in the fields and from their experiences as mothers, while men contributed from their experience as field workers. According to Paulo Freire's proposal, taken up by Brito-Lorenzo (2008), in education there should be a confluence between the symbolic spaces, the experience, the learning of daily life, from the potentialities of each participating subject. This form of acceptance and valuation of different types of knowledge is related to the Epistemology of the South (De Souza, 2010), since this knowledge can be transformed into new models of food production that allow them to build their proposal for food sovereignty.

At the end of the educational process, the subjects must develop their transformation proposals individually and collectively. Collectively, in the integration to the community school. The projects that are of interest to other people outside the work group are the breeding of worms and backyard animals, in addition to the production of fertilizers;

however, it is observed that the subjects have faced difficulties in developing the other axes of the course, but they recognize the importance of working all the axes together to achieve sustainability in the food production process. Individually, the transformation process was similar. Some of the subjects manage their projects to produce fertilizers, animal husbandry and sugarcane cultivation. Despite having different levels of success in the establishment of the projects, the central epistemological core of Participatory Action Research has been reached, which is a praxis-oriented experience, therefore, the way forward is the construction of networks of subjects, which, through social transformation, can achieve the emancipation of practices to produce food extensively (Sirvent and Rigal, 2012). The limitation encountered by the subjects, both in individual and collective actions, is the limited access to water in their homes and places of cultivation, therefore, a fundamental solution to the water problem must be considered because, although data from the National Water Commission establish that 76% of the country's water is used for agriculture, other sources describe that 80% of the population, which still lacks basic services, lives in rural areas (Arreguín Cortés et al., 2020).

CONCLUSION

The food sovereignty of the study locality has been deteriorated by the changes in the currently implemented modes of production, characterized by intensive production that generate cultural and socio-environmental damage.

With the development of the educational process and the transformation actions that were created and managed by the community, it has been possible to create social value, which is one of the main objectives of social management, since progress was made in the search for social progress with the elimination of barriers that hinder the inclusion of farmers in decision-making and giving them a voice to give visibility to local needs in order to achieve decent food in an environment suitable for life.

Social management contributes to the achievement of Food Sovereignty in this community, through food production, with a model managed from their needs, where they become the main actors of change to promote traditional knowledge and techniques that allow the care and the recovery of natural environments to prevent their privatization and

destruction, with respect to the work of peasants, who provide food with their work.

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