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*Artículos Científicos*

## **La actividad agrícola en localidades rurales en procesos conurbatorios: Una aproximación mediante el diagrama de Ishikawa**

***Agricultural Activity in Rural Localities in Conurbation Processes: An  
Approximation Using the Ishikawa Diagram***

***Atividade agrícola em cidades rurais em processos de conurbação: uma  
abordagem usando o diagrama de Ishikawa***

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## Resumen

El objetivo del presente trabajo fue analizar los cambios que sufre la actividad agrícola en una localidad rural que se encuentra bajo un proceso conurbatorio. Esto mediante una metodología innovadora que empleó herramientas como el diagrama de Ishikawa y guías de entrevistas, las cuales sirvieron para reforzar y reafirmar el dato numérico de los resultados obtenidos. Santa María Texcalac, Tlaxcala, es una localidad que presenta estas características. Su actividad económica principal, la agricultura, ha sufrido cambios significativos a consecuencia de este tipo de procesos. Para obtener esta información se empleó una metodología mixta: se aplicaron 85 cuestionarios a una muestra representativa, se realizaron 6 entrevistas a profundidad con informantes clave y se realizó un taller de Ishikawa con personajes de la localidad. Los resultados reflejan una actividad agrícola en peligro de extinción, una pérdida significativa de superficie para cultivo por cambio de uso de suelo, un reclamo cada vez más débil de apoyo al campo y cada vez más fuerte de creación de empleos, un desaliento para seguir siendo campesinos y una búsqueda de otra actividad económica para los hijos.

**Palabras clave:** actividad agrícola, localidad rural, proceso conurbatorio.

## Abstract

The objective of this work was to analyze the changes that agricultural activity undergoes in a rural town that is under a conurbation process. This through an innovative methodology that used tools such as the Ishikawa diagram and interview guides, which served to reinforce and reaffirm the numerical data of the results obtained. Santa María Texcalac, Tlaxcala, is a town that has these characteristics. Its main economic activity, agriculture, has undergone significant changes as a result of this type of process. To obtain this information, a mixed methodology was used, applying 85 questionnaires to a representative sample, six in-depth interviews were carried out with key informants and an Ishikawa workshop was held with local characters. The results reflect an agricultural activity in danger of extinction, a significant loss of area for cultivation due to a change in land use, an increasingly weak demand for support to the countryside and an increasingly strong job creation, a discouragement to remain peasants and a search for another economic activity for the children.

**Keywords:** agricultural activity, rural location, conurbation process.



## Resumo

O objetivo do presente trabalho foi analisar as mudanças que a atividade agrícola sofre em uma localidade rural que está em processo conurbatório. Isso através de uma metodologia inovadora que utilizou ferramentas como o diagrama de Ishikawa e guias de entrevista, que serviram para reforçar e reafirmar os dados numéricos dos resultados obtidos. Santa María Texcalac, Tlaxcala, é uma cidade que apresenta essas características. Sua principal atividade econômica, a agricultura, sofreu mudanças significativas como resultado desse tipo de processo. Uma metodologia mista foi usada para obter essa informação: 85 questionários foram aplicados a uma amostra representativa, 6 entrevistas em profundidade foram conduzidas com informantes-chave e uma oficina de Ishikawa com a população local foi conduzida. Os resultados refletem uma atividade agrícola em perigo de extinção, uma perda significativa de área para cultivo devido a uma mudança no uso da terra, uma demanda cada vez mais fraca por apoio ao campo e uma criação de emprego cada vez mais forte, um desestímulo a continuar sendo agricultores e uma busca por outra atividade econômica para as crianças.

**Palavras-chave:** atividade agrícola, localidade rural, processo de conurbação.

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## Introduction

Undoubtedly there are problems that are not exclusive to a particular state; They are characteristic problems of our time and that affect all contemporary society. Therefore, it is an important task to find proposals and alternative solutions for these problems. Studying and analyzing these under different approaches that enrich the collection of instruments for analysis is one of the main objectives of this work; In other words, innovating in the search for information to analyze and respond to current phenomena with tools that complement or

reinforce quantitative data, such as the Ishikawa diagram, used mainly in quality processes and studies, is one of the goals here proposals.

The process by which the growth is carried out without control and without plans of the cities is currently so daily that it is not perceived, it seems something very logical and natural not only in our country but in other latitudes: this is the case in Central America (Valladares , 2008), South America (Moreno, 2004) or in Europe (Naredo, 2003). In fact, according to figures provided by the United Nations Organization (UN), by 2030 more than two thirds of the world's population will live in urban areas (United Nations Population Fund [UNFPA], 2018).

The conurbations, added to other variables, show a fast and uncontrollable concentration of the population in the metropolis of more than 500 000 inhabitants. This uncontrolled concentration causes unemployment, underemployment, security problems, land use problems, lack of public services, administrative struggles and serious environmental problems, among others. (Naredo, 2000).

The ankylosed and static models of land use and the agricultural activities of the rural towns referred to a model organized in concentric circles around a unique focus that was the city. Definitely this model is no longer valid. If we wanted to understand and pigeonhole in the mental categories of the past century to the conurbative processes of today we would soon realize that there is no correspondence: the conurbation model that prevails in our days takes as a starting point the communication routes (Commission Economic for Latin America and the Caribbean [ECLAC], 2010).

A city, under this model, does not necessarily disturb the nearest rural town, but the tendency is to conurbish the rural towns close to the communication roads that link the most important cities. In the state of Tlaxcala it is easy to observe the conurbation process that is underway on the road from Apizaco to Huamantla. On the sides of this road, micro, small and medium enterprises (MSMEs) and housing areas have proliferated to such an extent that there are already few sections where there are no buildings. The same happens on the federal highway that connects the cities of Puebla and Tlaxcala. So at this point you can affirm the existence of a true conurbation promoted and based more on the means of communication than on the physical proximity of the populations that are conurbed.

These cited examples are not unique or exceptional, but represent the common denominator of the scheme or model of current conurbation processes. The characteristics of this model are also exemplified in other latitudes, such as that mentioned by Navarro (2005).

While this model is now predominant, as evidenced by empirical evidence, since the 1960s it was described as one of the forms of the evolution of cities (Moreno, 2004).

The consideration of the complex problem that these processes entail must not escape, especially if we specifically consider the economic and territorial incorporation of eminently rural peripheral communities into the dynamics of the city. The conurbation process suffered by some rural towns, whose main economic activity is or was agriculture, causes a series of profound changes that completely disrupt these communities, changing their physical landscape, their economic activities and even their sociocultural behavior.

In a conurbation process involving an urban spot and a rural town, one of the factors that undergoes the most profound changes is the use of land. The owners of the land do not aim to find alternatives that make their properties more productive; His intention and ambition is to sell them to the highest bidder.

The attitude of the peasants towards their “countryside” is diametrically opposed to what they had in the very near past: not long ago they defended their agricultural activity with passion and courage, they presumed it at the slightest opportunity, they recreated the view with their lands when their Sowing was in full greenery. However, they are now governed in terms of how much money they can get for their sale. Some authors argue that, given the growth of the city, the land has gradually become more a space to build than an agricultural one (Kautsky, 2002).

The problem of this research is to know precisely if in a social, economic and geographical framework that characterizes the rural communities in the process of conurbation, as is the case of the town of Santa María Texcalac, Tlaxcala, agricultural activity is marginalized and unstructured, with little economic importance buried by the influence of urban processes; or on the contrary, it is an activity that has found adaptation mechanisms not only to survive, but to energize taking advantage of the new urban elements that its context offers.

Beyond this knowledge, the project tries to internalize the mechanisms and causalities that the inhabitants of Sta. María Texcalac identify as generators of the present situational phenomena.

Santa María Texcalac is a town that presents the characteristics mentioned above. About 30 years ago we could have classified it as 100% rural; Its main economic activity was agriculture. However, derived from the consequences of a process such as the aforementioned, this town has undergone transcendental changes, especially in its main

economic activity, as can be seen in the Population and Housing Census X, XI, XII and XIII, in the information concerning the economically active population (PEA) of the primary sector, which has gone from 49.8% in 1980 to only 12.53% in 2010 (National Institute of Statistics and Geography [Inegi], 1980, 1990, 2000, 2010 ). These data reinforce the gradual and constant abandonment of agricultural activity in this town as a result of the conurbation process.

## Methodology

The proposed methodology for this project is of mixed type: quantitative and qualitative instruments were used that reinforced the numerical data. The documentary research served as a frame of reference. Its content was demography, land use, land use change and diversification of activities.

Field research was a fundamental part of the investigation. The tools used consisted of reconnaissance, sampling and questionnaire application, interviews with local authorities and key figures and the realization of a workshop using the Ishikawa technique. The latter helped to obtain multifaceted information that enriched the repertoire of knowledge on the topics discussed here. A work or field research must be based on direct observation by the researcher; the reports of other observers are valuable, but direct on-site knowledge by the researcher is invaluable (Pellicer, Vivas and Rojas, 2013). Aware of this premise, tours were made in the town of Santa María Texcalac; The fruit of these routes is a more precise knowledge of the local panorama.

The almost perfect division that can be observed in the town is admirable. From south to north it presents characteristics that exemplify and instruct on the effects of a conurbation process that irreversibly changes the landscape to one that incorporates a very special dynamic. Just tour the town to observe a phenomenon that jumps at first sight. It is obvious to any observer that the southern part of the town is the one that is undergoing an invasion of industries and work centers equivalent to workshops of all kinds. This is explained by being the part of the population that is crossed by the federal highway Mexico-Veracruz. The central part of the population can be said to be the one that presents a more urban panorama, without fully reaching the qualities of a city. On the other hand, the northern zone is the one that has features closer to rurality, not only for the fields still dedicated to agriculture, but also for the characteristics of the houses, roads and paths, among others.

As already mentioned, the target population was the community of Santa María Texcalac, and the information obtained from the XII General Census of Population and Housing was taken as a basis (Inegi, 2010). This locality has a total population of 5284 inhabitants, which form 1096 families, with an average of occupants per house of 4.82. Consequently, the sample was obtained from this universe of families. To perform this calculation, the sampling method was used considering the maximum variance. The characteristics that we used were that the families dedicated themselves or not to the agricultural activity in this locality. To select the sample size, an accuracy of 10% and a reliability of 95% were taken. A result of 88 surveys was carried out.

No other sampling method was considered because there were no strata or subgroups in which the population could be divided. It is known, for a first tour, that agricultural activity is still practiced, although it is evident that it does not have the same weight as years ago, as the same people of the locality indicate; and in the same way we find different land uses.

### **Design and application of a questionnaire to the selected sample**

The questionnaire has always been, in different research designs, a valuable tool for obtaining information. For Hernández, Fernández and Baptista (2014), the questionnaire “consists of a set of questions regarding one or more variables to be measured” (p. 217). The purpose of preparing a questionnaire is even better reflected in the description quoted by Quispe (1999: 125): “It is a format of questions duly ordered and organized to obtain the information that is required and allow its systematization, tabulation and subsequent interpretation”. Because of the elasticity and the multiple issues that can be handled in this type of format, it allows you to obtain information about what people do, what they have, what they think, know, feel or want. Precisely these are the areas to which we have directed the interrogation, always with the theme of agriculture as the guiding axis.

The farmer as a primary source of information is totally indisputable. If someone knows a process it is who lives daily immersed in it. It is the farmer who benefits or who suffers the consequences of a conurbation process like the one currently taking place in Sta. María Texcalac.

### **Interview with local authorities and key informants**

The objective of this research, given its characteristics, is somehow phenomenological. Hence, an important part of the methodology used must correspond to this theoretical perspective. From this perspective, the interview becomes a valuable tool both for the quantity and for the quality of information it produces. The interview, above all, allows to have a vision of the subject from the perspective of the protagonist; It is an instrument that helps to clear the collection of information that the researcher collects, analyzes and tries to interpret from an external position.

On the other hand, the cause-effect workshop responds appropriately to the demands of the participant observation (Bracamonte, 2015); and interviews with local authorities and characters respond to in-depth interviews. Both these and observation are considered as qualitative research methods.

In the case of this investigation, the non-directed interview system was chosen, in which, once the subject was raised, the interviewee is given ample freedom of expression - although care is taken in a subtle way that does not wander for a long time in others. subjects outside the interest of research. Regarding the subject of the interviewees, precisely, one point that was carefully taken care of is the following: that the choice fell on people with a broad knowledge of the locality and that, in some way, they had been involved in the detection and solution of community problems People with extensive experience in local affairs and with social acceptance within the community were sought.

In line with the above, two of those selected have held the three positions of maximum authority that exist within the town: community president, ejido commissioner and prosecutor. One of the interviewees is among the two oldest people in the town (95 years old); Despite their age, their motor, intellectual and emotional abilities are in a high degree of acceptability. In general, all respondents have held a position of local authority.

## **Realization of a workshop with Ishikawa technique**

### ***Cause-effect diagram***

It is obvious that diagrams are a useful and effective tool to visually represent a particular phenomenon, numerical or not. Therefore, the use of these is very helpful in almost all experimental designs and research tactics in all fields of science. For each field or for each problem analyzed, it is almost certain that there is a suitable type of diagram that, used with



propriety, provides invaluable help for the understanding and understanding of the multiple vertices that usually presents all phenomena interesting enough to be investigated. .

The sciences in their multiplicity have somehow adopted the diagrams that best fit the analysis of their own phenomenology. In that tonic, it is difficult, for example, that production systems seeking to improve their products through quality control do not use the Pareto chart. In the same way, a research design that aims at the detection of multicausal factors of a present reality, as is the case in our study, should be concerned with including in its methodological strategy a diagram, at least, that substantially enriches the collection of information that the researcher will have to achieve the proposed objectives.

Within the diagrams for the discovery of the polycasual factors of a given situation, we are inclined to choose the cause-effect diagram, commonly referred to by the name of its creator: Ishikawa, and, although less frequent, also called the fishbone diagram . This diagram has become creditor of such nickname by the way it acquires its representation. Some of its advantages are the following:

- You get a lot of information in a short time.
- The information is cleaned by the arguments of the participants.
- There is instant feedback.
- Participants are protagonists of the “situation” analyzed.
- The wealth of information can throw an unexpected insight.
- The interrelation of the participants works as a positive stimulus for heterogeneous participation.

While the main disadvantages are:

- Cannot be evaluated numerically.
- Its results are strictly qualitative.
- Allows only logical deduction but not mathematical.
- If there is no skilled moderator, the opinion can focus on a leader.

### *Cause-effect diagram mechanics*

In very general terms we will say that the cause-effect diagram is used to order and graphically represent the opinions or positions that result from a brainstorming process that each of the members of a group issues when responding to a question that is poses as the beginning or opening of the analysis.

It follows that a work team or group of experts or group of people involved in the topic was first selected. A question was chosen that directly addressed the topic of analysis and under the observation of a moderator, whose function was to prevent the hoarding of responses and motivate balanced participation. The brainstorm of ideas that each of the members of the group exposed was freely allowed to flow. The ideas obtained were recorded by means of a pointer and through a recording so that they were later stratified and classified making them suitable for representation in an Ishikawa diagram.

The elaboration of the causal diagram provided the opportunity to retake the problem or topic analyzed from many perspectives, since the multiplicity of externalized ideas allowed them to be categorized in the number of sections that the brainstorm demanded.

The steps that the mechanics propose are:

1) Write the selected topic or problem in a box placed in the middle on the right side of a sheet and draw a thick arrow that starts on the left side and points to the box (see figure 1).

**Figura 1.** Tema seleccionado

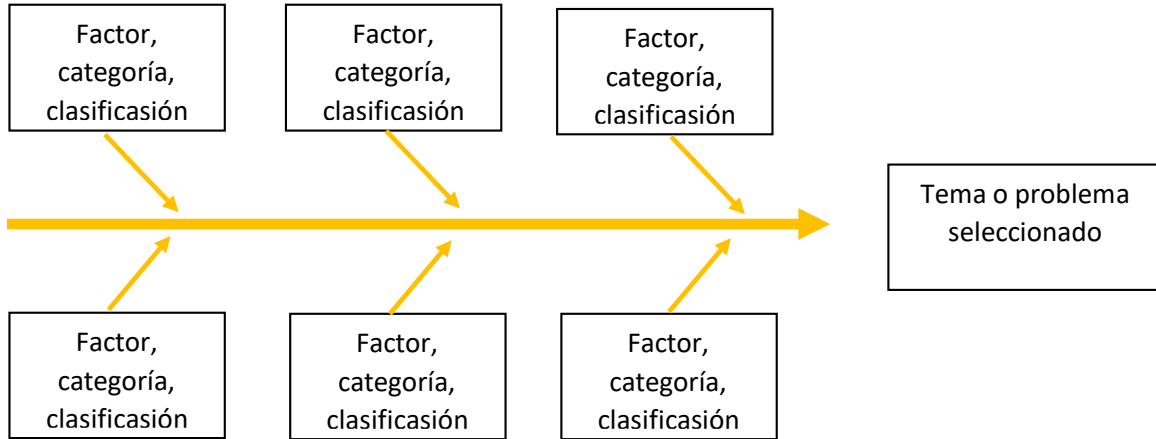


Fuente: Elaboración propia con información de Cantú (2011)

2) Categorize the brainstorm. Properly title each category or classification and write this title on secondary arrows that point to the body of the drawn arrow (see figure 2).

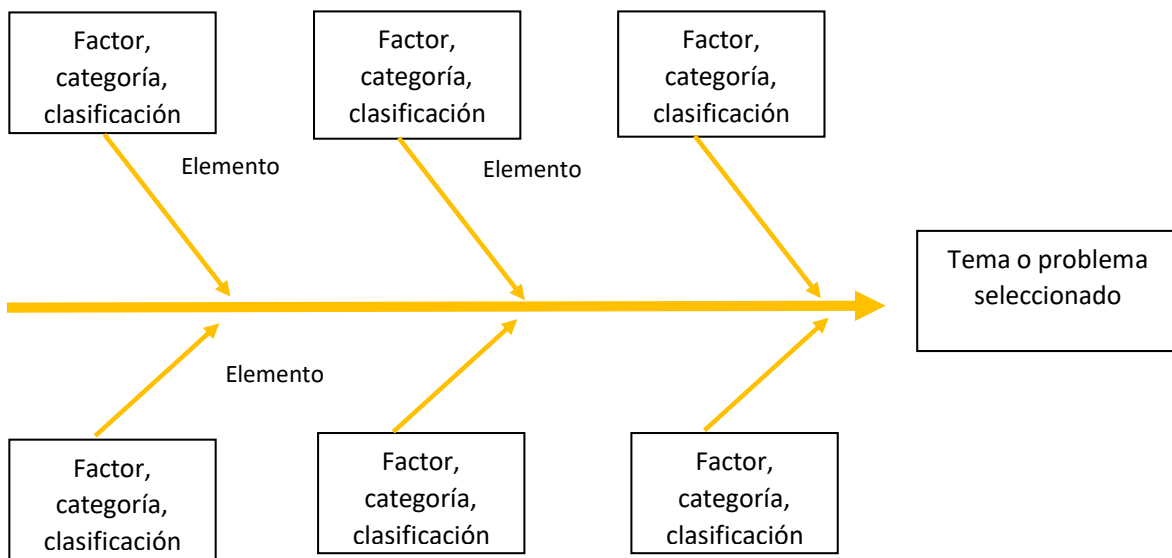
3) Write in greater detail the elements belonging to each of the categories, placing these elements on the sides of the secondary arrows, depending on the category or the one belonging to the factor selected by its rate of appearance (see figure 3).

**Figura 2.** Categoría



Fuente: Elaboración propia con información de Cantú (2011)

**Figura 3. Elemento**



Fuente: Elaboración propia con información de Cantú (2011)

As is clear, the relationship between the causal factors and the selected issue or issue is expressed by means of a graph that can be interpreted in two ways: the immediate one is the relationship between the selected issue or issue and the categories or factors as causes. potentials generating this issue or problem; the other way is the constituent relationship of

the elements that due to their affinity with the category title are the category itself broken down into its components.

The effectiveness and objectivity of the cause-effect diagram is important, since it shows the relationships between a problem and its possible causes, but also allows the group (if necessary) in future sessions to advance scenarios of potential solutions to the proposed problem. This methodological tool concretizes widely what Hernández et al. (2014) call in-depth sessions. The true objective is to obtain information in sufficient quantity and quality to meet the needs of the research, and this tool allows the selection of sources whose interaction functions as a stimulus for the production of said information.

## Results

In the locality under study agricultural activity is practiced both at the level of private property and under the ejido regime. Both forms of land tenure are important because of the total extent of farmland. The ejido of Sta. María Texcalac is 94 years old and its first extension a little over 35 years. The existence of 1430 original ejidatarios is reported in the register of ejidatarios of the population that occupies us and whose registry has the ejido commissioner. However, 870 ejidatarios and 560 possessors are reported here. This revealing data indicates that, of the total ejidatarios that existed in the locality, 61% are still ejidatario and 39% have ceded or sold their ejido. In addition, of this 39% that gave or sold its ejido, 70% is still used for planting, while the remaining 30% has undergone a change in land use, thanks to which the land has been acquired for industrial buildings or housing

Translating these data into hectares of land, as stated in the information provided by the Ejido Police Station, the parceled area of the four ejidos of the town totals 1678 hectares that originally meant farmland; however, in these ejido lands, especially in the part of the ejido that is located in the southeast and south part called Tochac, most industries have been established and new colonies have been born, such as September 15 and May 10. The authority responsible for ejido affairs estimates that 30% of the farmland has been lost in this process.

The ejidos, at least three of them: Coaxamalucan, Sn. José and El Colorín, are located on the periphery of the town about four kilometers from the center, while Tochac is part of the town. In the central, northeastern, southwest and northern parts of the town there are also farmland, these under the private property regime. And these lands have also entered the offer

especially for small businesses and housing construction under the condominium or private regime. The same authority calculates that a third of the total private property dedicated to agriculture has changed land use for the aforementioned purposes.

One of the variables included in the questionnaire, in addition to age, was the level of education. In this regard, it can be observed that the relationship between urbanity and distancing of the activities of the agricultural sector is shown through the educational levels of the interviewees.

**Tabla 1.** Escolaridad de los entrevistados

Edad	Profesional	Técnico	Bachiller	Secundaria	Primaria	Total
20-29			2	4	1	7
30-39	1	1	4	3	1	10
40-49	1	1	4	11	11	28
50-59		2		5	12	19
60-69				1	8	9
70 - 79			1	1	6	8
80+					4	4

Fuente: Elaboración propia

The analysis of these data leads us to present the following considerations: of the total number of respondents, 34 are under 45 and of these only 32% are engaged in agricultural activity. Another interesting fact is that 91% of these report a high school academic level up. On the other hand, respondents over 45 years old add up to 51 people, of which 62.7% work in agriculture, and of these, 63% report a level of primary schooling. From this information we obtain numerical arguments to deduce that the greater the academic level, the greater the distancing of agricultural activities. But there is one more link in this chain: at an older age, lower academic level, which also explains why most of the farmers of Sta. María Texcalac are over 45 years old.

**Tabla 2.** Escolaridad de los entrevistados que practican la agricultura como actividad principal

Edad	20-44		45+	
	#	%	#	%



<b>Profesional</b>	0	0	0	0
<b>Técnico</b>	2	18	1	3
<b>Bachillerato</b>	4	36	1	3
<b>Secundaria</b>	4	36	10	31
<b>Primaria</b>	1	10	20	63
<b>Total</b>	11	100	32	100

Fuente: Elaboración propia

An element that attracts attention is that the younger the interviewee is, the probability that their main activity is agriculture decreases significantly. This data is very important when trying to make a diagnosis about the future of the countryside in the population of Sta. María Texcalac.

The information obtained is unquestionable, at least this survey proves it; In Sta. María Texcalac, Tlaxcala, agricultural activities are currently practiced mostly by older people, young people do not seem to attract this productive sector. The reason is because the field at the level of smallholders or ejidatarios is not profitable, it does not provide income to support a family. And for these same reasons, older people encourage in their children other economic activities than agriculture.

It is imperative not to lose sight of the fact that this dynamic of economic activity change that is observed in the locality occurs in a conurbation process scenario; The access that the inhabitants of this town have with the city of Apizaco and the proximity of the media with other cities such as Huamantla has facilitated and in some way induced the search for other economic activities that provide them with other types of satisfiers.

Another important element that has helped facilitate the search for other economic activities to the detriment of those in the primary sector is the settlement of industries of all sizes, which begin to characterize part of the panorama of the town. This process has two consequences: on the one hand, it offers young people access to other types of economic activities than agriculture, and on the other, the farmer offers his land for the construction of industrial or residential infrastructure.

**Tabla 3.** Actividad económica

<b>Edad</b>	<b>Agricultura</b>	<b>Otra</b>	<b>Total</b>
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	#	%	#	%	#	%
<b>20-44</b>	11	32.4	23	67.6	34	100
<b>45-84</b>	32	62.7	19	37.3	51	100
<b>Total</b>	43	50.6	42	49.4	85	100

Fuente: Elaboración propia

As can be seen in the table above, although half of all respondents are peasants, of those surveyed with more than 45 years, 63% are peasants, while only 32% of those under 45 claim to be peasants.

The farmers who said they had a complementary economic activity (25%) were asked what reasons they had to look for this. The answer was unanimous: 100% replied: "Because it doesn't reach what the field leaves".

Of the total respondents, 56 currently practice agriculture, either as a main activity (77%) or as a complementary activity (23%). From these data it turns out that currently 29 respondents do not practice agriculture either as a main activity or as a complementary activity. Taking the latter as elements of analysis, we find the following: 41% practiced agriculture at another time. The reasons they had to leave this activity were:

- ✚ 50% because agricultural activities became non-profitable;
- ✚ 25% because he sold his land;
- ✚ 17% for reasons of illness, and
- ✚ 8% by age.

In order to know the perspectives of young people in the community, they were asked the following questions: "Are your children currently engaged in agriculture?" The answer to this question is revealing and symptomatic, perhaps it is giving us a signal that allows us to anticipate a future scenario of agricultural activity in Sta. María Texcalac, Tlaxcala. This question was applied to respondents who responded to practice agriculture as a main economic activity or as a complementary economic activity and the results obtained show the following (see table 4).

**Tabla 4.** Respuesta de los encuestados sobre si sus hijos se dedican o no a la agricultura

	Agricultura	
	#	%

<b>Total</b>	56	100
<b>Sí se dedica a la agricultura</b>	6	10.7
<b>No se dedica a la agricultura</b>	50	89.3

Fuente: Elaboración propia

The data obtained in this category point to an abandonment of the peasant tradition.

When questioned about their expectations of the countryside and proposals to avoid abandoning agricultural activities in the town, the inhabitants of Sta. María Texcalac are convinced that the small farmer, the ejidatario, is not attractive to the Government, that the good supports are only intended for owners of large areas of land, that the only farmers who have a future right here in the town are those who are “hoarding” land by buying small properties.

These results are decisive. The small owner of the land in this town is convinced that it does not meet the characteristics to be taken into account as a passenger of the modernity car. It is not that there have been no attempts to rescue agricultural activity in the locality, only that the programs implemented, with all their goodness, failed because they did not have adequate follow-up.

The experiences of the participants of these programs have not been promising; They have somehow felt cheated. As stated by Lic. Flores, former community president, who says that cattle and poultry farms were promoted that had everything to succeed, however, they were canceled due to a change in authority.

The associations have also been an essay that generally, due to lack of authentic and selfless leadership, have not come to a successful conclusion. The particular attempts that smallholders have made to obtain official support have not had the expected effectiveness. A testimony of a farmer participating in the group dynamic stated: "If I had the guarantees required to grant me a loan for the purchase of a small tractor, I bought it in cash without having to ask them."

Everything is combined so that the Government appears as the only person responsible for the situation that the agricultural activity is going through in localities like the one we are studying. However, this is not the case: farmers do not only expect credits or subsidies, they see a market flooded with agricultural products against which, although they know their doubtful quality, they cannot offer competition for the price at which they are



offered. But they are still convinced that a serious political decision to rescue the camp is possible.

A testimony that seems to go against the general opinion is expressed by Mr. José Quintero, one of our key informants, who affirms with conviction that “one day the Government will realize that the small farmer is very important and will do something to re-produce without having to buy abroad.”

In fact, for the support of the Government, 79% of the interviewees are suggesting programs that have as their objective a true rescue of agricultural activities at the level of smallholders, smallholders; programs that aim to make the field attractive, that allow for profitability to the agricultural activity that can sustain itself and thus avoid selling it. As knowledge of the agricultural situation of these localities increases there will be a greater capacity to detect, design or discover the most appropriate actions or programs to which the interviewees refer, and above all create conditions that make them attractive to be adopted. as their own by the protagonists, so that their durability is the first guarantee of their effectiveness.

### Interview with key characters

Table 5 shows the characteristics of the people chosen as key informants to conduct interviews with the in-depth interview methodology.

**Tabla 5.** Perfil de informantes clave

Nombres	Edad	Cargos Ocupados			Actividad Económica
		Presidente	Comisariado	Fiscal	
Lic. Yolanda Flores Lezama	45	X			Docencia
Sr. José Quintero López	94	X	X	X	Comercio/Campesino
Sr. Juan Acosta Quiroz	63	X	X	X	Campesino
Prof. Ramón Flores García	61	X			Docencia
Sr. Arturo Hernández Acosta	50	X			Campesino

Sr. Ponciano Duran					
Toscuento	55	X	X		Campesino

Fuente: Elaboración propia

As can be seen, the value of the information of people with this profile is undeniable, their entire lives have been in the population of Santa María Texcalac, and the fact of having held positions of authority in the locality is an indication of the knowledge that the inhabitants of This community have them and vice versa.

The most important results obtained from these in-depth interviews are recorded in the following table.

**Tabla 6.** Información obtenida de entrevistas con informantes clave

Opinión	Tabla de aparición	
	#	%
El campo no es redituable. Se le invierte demasiado y no se recupera ni lo invertido. No se puede vivir del campo.	6	100
A los jóvenes no les interesa el campo.	6	100
El futuro de la actividad agrícola es el abandono.	6	100
Existe acaparamiento de tierras.	6	100
No existen apoyos efectivos del Gobierno al pequeño campesino.	6	100
Los actuales campesinos son gente de edad avanzada.	4	66
El campesino vende o deja su pequeña propiedad y emigra.	3	50
Gente ajena a la comunidad está comprando terrenos.	3	50

Fuente: Elaboración propia

It is necessary to mention that these interviews with “key informants” were conducted individually and on different dates, therefore, there was no possibility of communication between them that facilitated the comment and the agreement of responses, as well as the imitation in the same. This clarification is pertinent because the analysis of the information

obtained seems like an agreement of opinions. In five categories, our interviewees agree 100%. Already the analysis of the results of the survey mentioned that "the field is not profitable." This communion of results leads us to the conclusion that one of the reasons why agricultural activity in the town of Sta. María Texcalac, Tlaxcala, is being abandoned is precisely because "you cannot live in the countryside". This reason is complemented by the opinion, also exterminated by all informants, that "the future of agricultural activity in the nurseries is abandonment"; The conceptual relationship between these two categories is evident.

The information obtained through these interviews confirm the results obtained through the application of questionnaires. The total of our key informants agrees that "there are no effective government support for the small farmer"; Not only do they refer to monetary support, but also to real rescue programs for agricultural activities for smallholders and ejidatarios.

Two other opinions that have a causal relationship with the abandonment of agricultural activities are that "today's farmers are elderly people" and that "young people are not interested in the countryside." These results are also found in the analysis of the other techniques used in field research.

### **Results of the Ishikawa workshop**

The results obtained from the application of this method to obtain direct, objective, feedback and sufficient information to achieve the goals already specified met beyond the calculated expectations. We are sure that the success obtained was based on respect for the methodology that this tool requires in advance (Cantú, 2011).

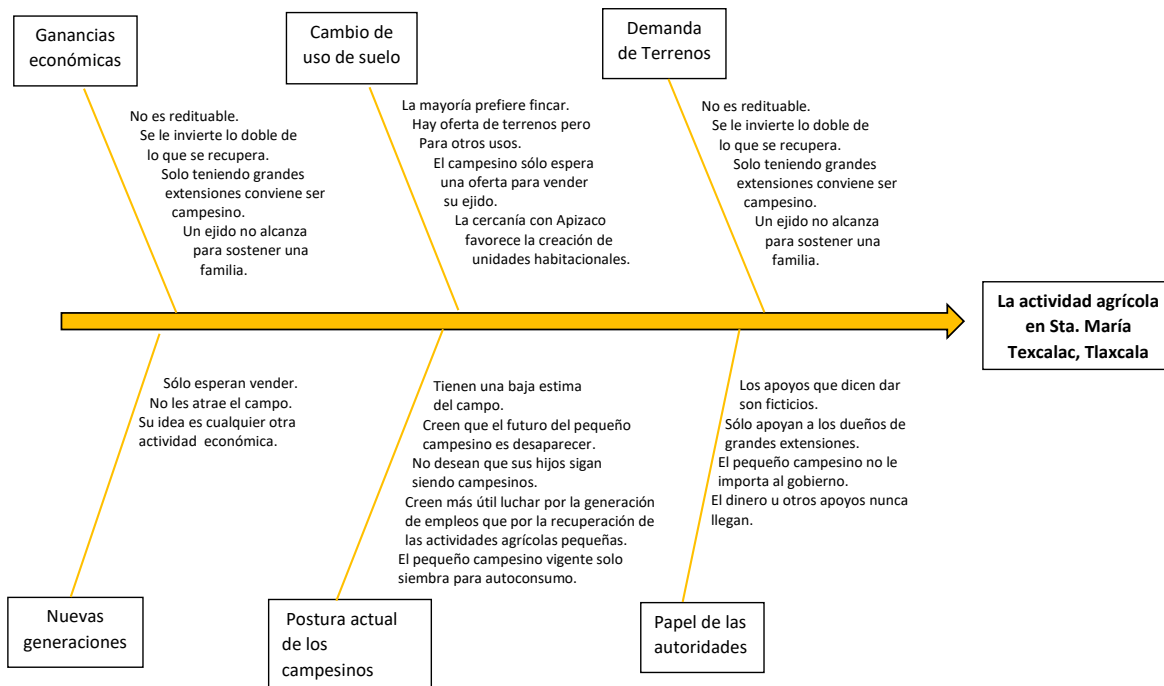
One of the factors that played a decisive role in the richness of the information collected was the selection that was made of the participants in this group dynamic. The group was made up of the following people:

- Mr. Maximino F. García, 60, recently retired from a health services company. It comes from an eminently peasant family. It currently combines agricultural activities with other economic activities. He held the second important position in the administration of the local temple.

- Mr. Horacio Picazo Sánchez, 38 years old. Its current economic activity is the meat trade. It has land dedicated to agricultural activities that rent to other people.
- Mr. Virgilio Huerta Sánchez, 71, retired from a service company in the electricity sector. It comes from a family of farmers. It has agricultural land that is worked by relatives.
- Mrs. Ma. Esther Rodríguez, 58 years old. Housewife, help her husband in agricultural activities. It has other economic activities, candy mini-commerce, to support family income.
- Mr. Roberto Flores G., 55 years old. Dedicated to the field by family tradition. Performs other economic activities that consist of a small miscellaneous that provide the complement of household income

The result of the brainstorm that occurred about the situation of agricultural activities in Sta. María Texcalac, Tlaxcala, gives the following cause-effect diagram (see figure 4).

**Figura 4.** Diagrama de Ishikawa



Fuente: Elaboración propia

This cause-effect diagram traces a route very similar to that generated by the results obtained through the other tools of the field investigation. There are elements that are obvious

and did not go unnoticed by the moderator of this dynamic. All the members agreed, and did not miss the opportunity to reiterate, that the “small-scale” field, that is, as a practice of smallholding or small farmer or ejidatario, is unquestionable because the economic expenditure they demand is not recovered with the product obtained. At this point they were categorical: the ejido or the small property is not profitable. This result is repetitive throughout the investigation process. An analysis of the information obtained through this method leads to the confirmation of results of the other methods used in the field investigation. The results coincide and basically focus on the following categories:

- Agricultural activity at ejido level or small property is not profitable.
- The current farmers in the community of Sta. María Texcalac are older people.
- Young people seem not interested in the work of the field.
- Government programs do not make agricultural activities attractive.

All other opinions and themes of his interventions seemed to revolve or have these topics as a substrate. Reading between the lines it could be interpreted that these themes are the generators or the causes of the critical situation of abandonment that agricultural activities are suffering in Sta. María Texcalac.

## Conclusions

In this town we find a close relationship between the visible gradual abandonment of agricultural activities and the implementation of neoliberal policies. This relationship is reflected, above all, in the clamor of smallholders because government support is only available to large agricultural producers. Agricultural activity in this locality is progressively decreasing not only because of the effects of the conurbation process, but also as a consequence of liberal policies that privilege duty-free food imports. This type of decision-making definitely pushes the small farmer to abandon his agricultural activity and to look for another economic activity that allows him to survive.

Field research was decisive in reaching the goals. The tools chosen were to confirm the information obtained, they worked in the manner of test-retest and the research subjects allowed to have coverage that would reach a representativeness of the population in such a way that there was no doubt about it. However, this work leads to the conclusion that the causal factors of abandonment of agricultural activities in Sta. María Texcalac are both endogenous and exogenous; among the first we have that “young people are not interested in

agricultural activities” and that “70% of the peasants in Sta. María Texcalac are elderly people (over 45 years old)”); Among the latter we find the "economic policies", that "the field at the level of ejido or small property is not profitable", "the demand for land for industrial and housing infrastructure", "the insufficiency of government support" and " the weather phenomena”.

Perhaps one of the signs that openly reflects this conurbation process is the excessive growth of the transport sector in the community. The time in which it has increased does not match either the population increase or the development of other items within the community itself, for example, the health sector, the infrastructure that aims to promote culture and entertainment, in addition of other sectors that seem stagnant for many years, however, the daily flow of the population towards the urban spot throughout the day realizes that this city has become a center of activities that is already beginning to be considered as a peripheral annex.

The results of each of the research activities were truly enriching. The information collected leaves us in a position to understand the problem through which the small farmer who refuses to die but who, despite his efforts, sees that the end of an entire family tradition is near.

We conclude with disenchantment that the alternatives that agriculture has in a society with these characteristics to subsist are not as feasible as one would like, and they are not because both endogenous and exogenous factors are not conducive. On the one hand, the attitude of the local farmer is resigned, he no longer intends to reactivate agricultural activities; and on the other, the government policy that prefers to buy food that produces them adds to stop any attempt to reactivate in this type of activities. The small farmer is inert to the neoliberal economic policy. It only remains to remain a peasant for the love of the land. This is shown in the different testimonies, both in the interviews, in the dynamics, and in the survey.

In addition to the above, it is found that the small producer is at a total disadvantage in order to become competitive within the market. The small farmer of Santa María Texcalac prefers to use the corn he has left, after satisfying his needs for self-consumption, as animal feed rather than "squandering it", because the market price is ridiculous; when this corn should be paid at a special price, since it is the product of a truly artisanal work. The disenchantment of the peasants is such that Mr. Roberto Flores García, participant of the

workshop, expressed the following: "If the Government is not interested in us, it should at once implant in our town industries that give jobs to our children and forget about field".

On the other hand, it should be mentioned that the local farmers are not in a situation of hunger or malnutrition, hence their position is not the desperate claim of an extreme circumstance. The farmers of this town have learned not to live exclusively in the countryside, either by adopting a complementary activity or because other family members contribute financial resources. However, the ghost of hunger and malnutrition should not be ruled out and should be considered as a future possibility. Therefore, under these considerations, it can be affirmed that the times are appropriate to take preventive measures that prevent rural communities that are in these urbanization or conurbation processes from losing sight of the risks involved in abandoning agricultural activities, and advantage of preserving these activities to guarantee security and, above all, food sovereignty.

The elements that undermine this coexistence are the disorder and lack of planning with which small, medium and large industries are installed that tempt the peasant to sell their land to be used in the creation of this infrastructure, which, in turn, mainly influences youth to undertake a search for economic activities different from those of their parents. Another consequence of this settlement of industries is the breakdown of the ecological balance in the region, specifically in the town of Santa María Texcalac, where its tributaries are witnesses of the pollution produced by said infrastructure. A project that takes these negative elements into account will surely be more likely to succeed, but above all it will gradually recover the sense of locality in the inhabitants of communities that, like the case of Santa María Texcalac, are experiencing a conurbation process that is not easy to digest or assimilate, since it implies a profound change in all the orders of life of the inhabitants of these localities.

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