








Challenges faced by farmers in Muna and Samahil, Yucatán, México

Retos que enfrentan los agricultores de Muna y Samahil, Yucatán, México

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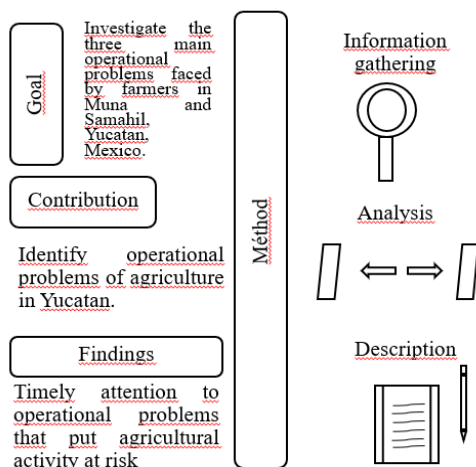
Abstract

The agriculture is a fundamental economic activity for any country, since it provides food to the population and generates income for the different links in the chain. Objective: It was to identify the main operational problems faced by farmers in the municipalities of Muna and Samahil, Yucatán, Mexico to continue planting crops. Methodology: the study was descriptive, non-experimental, and transversal and a mixed approach, in which the survey technique was used that addressed a sample of thirty-four farmers from the municipalities of Muna and Samahil, Yucatan, Mexico and the technique interview that was addressed to an official from Ministry of Agriculture and Rural Development. Results: It was found that the main problems faced by farmers from Muna and Samahil, Yucatan, Mexico to continue farming were the high cost of inputs crop loss and the difficulty they have in marketing their products in the markets. Conclusions: The formal organization of the farmers of Muna and Samahil, Yucatan, Mexico is necessary for the acquisition of wholesale inputs, greater training and technical, assistance to reduce crop losses and the design of distribution logistics, which exceeds intermediation and allows farm workers to receive fair payment for their crops.

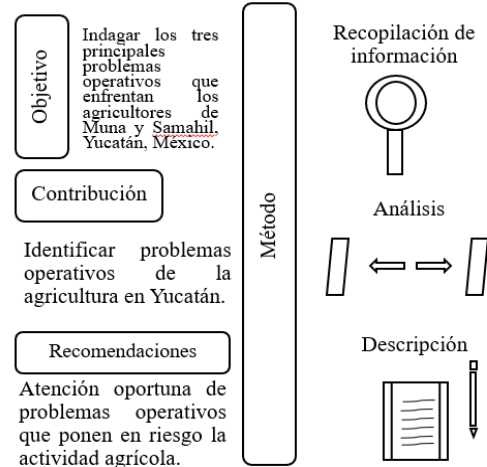
Resumen

La agricultura es una actividad económica fundamental para cualquier país, ya que provee de alimentos a la población y genera ingresos a los diferentes eslabones de la cadena. Objetivo: Fue identificar los principales problemas operativos que enfrentan los agricultores de los municipios de Muna y Samahil, Yucatán, México para continuar con la siembra de cultivos. Metodología: el estudio fue descriptivo, no experimental, transversal y de enfoque mixto, en el que se usó la técnica de encuesta que se dirigió a una muestra a treinta y cuatro agricultores de los municipios de Muna y Samahil, Yucatán, México y la técnica de entrevista que se dirigió a un funcionario de la Secretaría de Agricultura y Desarrollo Rural. Resultados: Se encontró que los principales problemas que enfrentan los agricultores de Muna y Samahil, Yucatán, México, para continuar cultivando fueron el alto costo de la producción (insumos), la dificultad que tienen para comercializar sus productos en los mercados y la pérdida de cosechas. Conclusiones: Se hace necesaria la organización formal de los agricultores de Muna y Samahil, Yucatán, México para la adquisición de insumos al mayoreo, el diseño de una logística de distribución, que supere la intermediación y permita a los trabajadores del campo, recibir un pago justo por sus cosechas y mayor capacitación y asistencia técnica para reducir las pérdidas.

Farming Challenges



Retos Agrícolas



Municipios, economy, rural, markets, operations

Municipios, economía, rural, mercados, operativa

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Introduction

Agriculture is a fundamental activity for human survival, as it provides food both for consumption and to assist the raw materials industry in the manufacture of other foods and derived products. This activity has presented operational and socio-economic problems in its productivity focused on satisfying basic food requirements, as well as an inability to meet the consumption demands of an increasingly global agricultural society (Fraga, Pérez and Arias, as cited in Fraga and Arias, 2015: 176).

Agriculture depends on various factors such as the nature and management of resources for its correct implementation and commercialisation, which allows for a return on investment. Agricultural management plays a fundamental role in the expected productivity of the spaces destined for crops, however, operational problems hinder the achievement of the planned goals, hence the relevance of identifying them.

The present research study is contextualised in the state of Yucatan, Mexico. According to the State Government (2024, 1 January) 'The state of Yucatan consists of 106 municipalities divided into 7 regions, which are:

1. Region I: West (Maxcanú, Celestún, Chocholá, Halachó, Hunucmá, Kinchil, Kopoma, Opichén, Samahil and Tetiz).
2. Region II: Northeast (Abalá, Acancéh, Baca, Conkal, Chicxulub Pueblo, Ixil, Kanasin, Mochochá, Progreso, Seyé, Tahmek, Tecoh, Timucuy, Tixkokob, Tixpéual, Ucu, Umán and Yaxkukul).
3. Region III: Centre (Izamal, Cuzamá, Hocabá, Hoctún, Homún, Huhí, Kantunil, Sanahcat, Sudzal, Tekal de Venegas, Tekantó, Tepakán, Teya, Tunkás, Xocchel).
4. Region IV: Litoral Centro (Motul, Bokobá, Cacalchén, Cansahcab, Dzemul, Dzidzantún, Dzilam de Bravo, Dzilam González, Dzoncauich, Muxupip, Sinanché, Suma de Hidalgo, Telchac Pueblo, Telchac Puerto, Temax and Yobain).

5. Region V: Northeast (Tizimín, Buctzotz, Calotmul, Cenotillo, Espita, Panabá, Rio Lagartos, San Felipe and Sucilá).
6. Region VI: East (Valladolid, Cantamayec, Cuncunul, Chacsinkin, Chankom, Chemax, Chichimilá, Chikindzonot, Dzitás, Kaua, Peto, Quintana Roo, Sotuta, Tahdziú, Tekom, Temozón, Tinum, Tixcacalcupul, Uayma and Yaxcabá).
7. Region VII: South (Ticul, Akil, Chapab, Chumayel, Dzan, Mama, Maní, Mayapán, Muna, Oxkutzcab, Sacalum, Santa Elena, Teabo, Tekax, Tekit, Tixméhuac, Tzucacab)'.

The present research seeks to identify the main operational problems faced by farmers in the municipalities of Muna located in the southern zone and Samahil located in the western zone of the state of Yucatan, in order to continue their economic activity, through a descriptive investigation to propose actions oriented to their attention.

The research study is pertinent because agriculture has been neglected, which has worsened over the years in Mexico, and Yucatan is no exception. Urbanisation and economic growth in the state have had an influence in part, causing new generations to stop showing interest in agricultural activities, and young people who decide to continue farming with their parents or relatives have to face operational problems that put their continuity at risk.

The present research investigates the three main operational problems experienced by agricultural producers in Muna and Samahil, Yucatan, in an effort to continue their economic activity. The information obtained from the study will be of great use to federal and state authorities, as it can be used for the design of public policies focused on strengthening agricultural activity by taking advantage of the areas of opportunity detected. This is a descriptive, non-experimental, cross-sectional research with a mixed approach, in which a survey was used as a technique for collecting information, which feeds the study from the quantitative approach, and which was addressed to thirty-four agricultural producers in the municipalities of Muna and Samahil, in the state of Yucatán,

The semi-structured interview technique was also used, which nourishes the research from the qualitative approach, and which was carried out with the head of the agricultural representation office in Yucatan of the Secretary of Agriculture and Rural Development Yucatan Delegation, in order to contrast the results obtained in the survey.

This article consists of four sections: the first is the introduction, where the problem to be studied is presented, including a theoretical framework in which the background of the study is presented, which serves as a reference in the exposition of the topic; the second section is the methodology used, understood as the manner or form in which the research was carried out; the third section is the results in which the results of the survey are presented; and the third section is the results in which the results are presented, The third section is the results, in which the findings of both the survey and the interview are presented, from which a discussion is drafted to identify the main operational problems faced by farmers in Muna and Samahil, Yucatan, Mexico, and which leads to the fourth section, which is the conclusions of the research study.

According to Freire (2019: 3) 'Economics is the social science that studies human behaviour in a world of scarce resources in which it is necessary to choose how to apply them in order to achieve the highest possible welfare at any given moment'. The scarcity of resources forces people and organisations to make rational use of them. In Mexico, companies are grouped according to their economic activity.

Economic activities in Mexico are classified into sectors. For García (2015: 29) there are three sectors in the market, these are:

1. Primary sector: this is the sector that obtains resources from nature and contemplates economic activities such as agriculture, livestock, fishing, among others.
2. Secondary sector: it is in charge of the transformation of raw materials into consumer products, here we also find companies dedicated to construction.
3. Tertiary sector: includes services such as transport, tourism, consultancy, health care.

The quaternary sector is a section of the economy, which is based on knowledge and includes the production and exchange of information, technology, consultancy, education and research.

This research study focused on the primary sector, specifically on agriculture, in order to understand the challenges faced by farmers in two municipalities of Merida, Yucatan, Mexico, to continue with their economic activity in the face of the problems that arise in their environment, and the difficulties that jeopardise their permanence and stability in the markets they serve. For Reyes and Cano (2022: 53), 'agricultural production is one of the most important activities for feeding humans and other living species.

For Moreno-Ortiz (2023: 6), food is the indispensable element for people to survive, so any change in its generation or action that is not carried out has a direct impact on production processes and, consequently, on the society it supplies. However, poverty in the countryside is alarming; it is presumed that the poorest people in the country are found there, and this is precisely what gives rise to large-scale migration, in search of income that will allow families to satisfy their basic needs in order to survive. The policy of retribution to preserve the forests and official support has contributed to reducing this migration (Martínez and Salazar, 2022: 101).

For Ceballos and Nopal (2021: para. 57), farmers state that the new generations are no longer interested in the countryside, although they fear that their land will be sold or forgotten when they stop working it. Even though the future is uncertain for many farmers, most of them are willing to work the land for as long as possible.

For Yuñez, Rivera, Chávez, Mora and Taylor (2015: p. 3) in the so-called rural economy it is common for farmers to engage in other activities to generate income, ranging from forestry production, offering their labour as salaried or piece-rate workers, and even allowing some to migrate to the cities in search of employment.

This is an alternative to obtain income and be able to survive with their families due to the variable income from agriculture, given the operational problems involved in obtaining the expected harvests, to later sell them in the markets.

For Corona (2016: p. 15) Mexico faces a variety of difficulties related to its structure such as land legality, scarce financing, changes in demographics, the way farmers organise themselves, and a competitive stance that promotes responsible growth among others.

According to INEGI (2022: para. 1) in Mexico 32.1 million hectares are used for agriculture, 83.8% of which is carried out by men and 16.2% by women. The main problems they face are the high costs of inputs and services, and issues related to climate change that affect harvests.

According to Avila (2021: p. 342), the scarce integration among producers in the acquisition of materials for the harvest, as well as actions for its commercialisation, raises the purchase costs, granting a reduced payment to farmers for their harvests, as opposed to intermediaries, who having distribution capacity, obtain the greatest benefits.

Methodology

This research is descriptive, as it seeks to expose the operational problems faced by agricultural producers in the municipalities of Muna and Samahil, Yucatan, in order to continue with their economic activity, that is, to continue sowing, harvesting and selling. The research was descriptive, non-experimental, cross-sectional and of mixed approach.

Two data collection techniques were used, the first was the survey and the second was the interview. The survey was addressed to thirty-four agricultural producers, twenty-two farmers from Muna, Yucatan, and twelve farmers from Samahil, Yucatan, Mexico. The questionnaire used in the survey was divided into two sections, the first section corresponded to the general data of the respondents and the second section consisted of twenty-seven items, where the farmers were asked about the operational problems they face in their economic activity.

A semi-structured interview was also applied with the support of an interview guide consisting of 15 open questions to the Head of the Agricultural Representation Office in Yucatan, of the Ministry of Agriculture and Rural Development, who kindly responded to the questions posed, related to agricultural activity in Yucatan.

The research study was divided into three phases. The first phase included documentary research to delimit the problem to be addressed, and a review of the literature, in which theoretical approaches were detected and used as a reference in the study, and which were compared with the results obtained.

The second phase included field research, in which thirty-four agricultural producers from the municipalities of Umán and Samahil, Yucatán, Mexico, who were randomly selected in the aforementioned municipalities, were surveyed, invited to participate in the study and accepted voluntarily, and an official from the Ministry of Agriculture and Rural Development was interviewed.

The third phase considered an analysis of the quantitative and qualitative information collected, which was used to write up the findings and compare the literature taken as a reference with the results obtained in the research study, in order to present conclusions and recommendations.

Results

Based on the survey conducted among the farmers in the municipalities of Muna and Samahil, it was found that the farming population is ageing and that there is little succession of the next generation, which puts at risk the continuity of agricultural activity in the coming decades in the municipalities in question, given that the average age of the farmers surveyed is 50 years old.

This represents a long-term problem, since as the population grows, it will demand a greater quantity of food, which will open up the market to large food-producing corporations, to the detriment of the agricultural producers in the municipalities mentioned, whose crops are grown in areas of around 400 square metres or an area better known as mecate in the Yucatecan milpa.

Agriculture is not an economic activity exclusive to men; it is also practised by women. In the survey, 91% of the farmers surveyed were men and 9% were women. This means that for every 10 male farmers in the Yucatan milpa, there is one woman in the activity.

Although the native language is fundamental to preserve the culture, it can also have a negative impact on communication in the marketing centres. In the research study it was found that half of the farmers surveyed were Mayan speakers, that is, they speak the Mayan language, which allows us to observe the conservation of this important language among farmers in the municipalities of Muna and Samahil, as can be seen in Figure 1.

Box 1

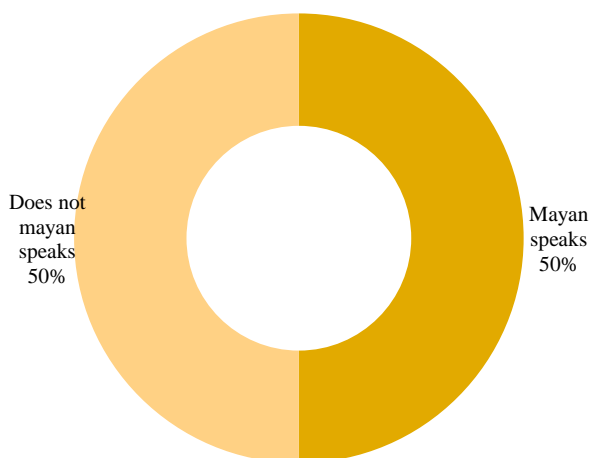


Figure 1

Percentage of agricultural producers surveyed who speak the Mayan language

Source: Own elaboration based on survey of agricultural producers

It was found that most of the farmers surveyed do not keep any records related to their economic activity, which does not allow them to know clearly whether they are gaining or losing from their production.

Due to the low level of schooling reported by most of the farmers surveyed, who on average only have basic education, most of them do not have the discipline to keep records of their field operations.

This can be seen in Figure 2 where 82% of the farmers surveyed reported that they never keep any records of their production units.

However, the farmers who do keep records in their production units are in relation to the area cultivated, the volume of production harvested and sold, the costs of inputs used and the income from sales. Only 18% of the respondents reported keeping records of their production and operations, but they do so occasionally or systematically.

This shows that there is little knowledge among the farmers surveyed in the fieldwork about the importance of keeping production records for better control, which makes it possible to clearly visualise how much income is being obtained from the sale of agricultural production, compared to what it costs to cultivate it.

Box 2

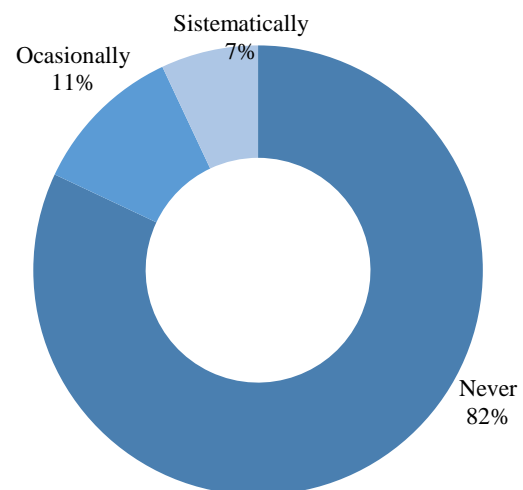


Figure 2

Frequency with which the surveyed farmers keep records in their production units

Source: Own elaboration based on survey of agricultural producers

With respect to the federal and state support received by the farmers surveyed, 88% have received some support and 12% have never received any support. The answers provided by the respondents coincide with what was stated by the Responsible for Agriculture in the Secretariat of Agriculture and Rural Development Yucatan Delegation, who as part of the interview stated how expensive agricultural production is becoming, hence the importance of the support received in economic resources and in kind with the delivery of fertilisers, to cushion the costs of production.

According to the responses of the respondents, the main support received has been in the form of technical assistance, instruction in the processing of agricultural products, advice on financing and the marketing of products. With regard to agricultural insurance, the respondents stated that they had no knowledge of it, which shows that they had no knowledge of how useful it could be to prevent crop protection as a mechanism to reduce crop losses caused by external agents such as natural phenomena. Figure 3 below shows the types of support that the farmers surveyed say they have received from the government in recent years.

Box 3

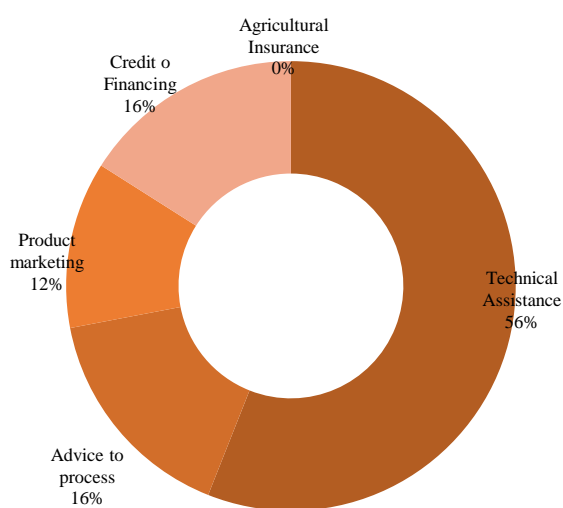


Figure 3

Types of federal and state support received by surveyed farmers

Source: Own elaboration based on survey of agricultural producers

Another of the problems that the farmers addressed in the research study face, in addition to the high costs of production, mainly of inputs, for sowing, is the complexity that the marketing of farm products can be, given that many producers are unable to take their products to consumer markets, due to the lack of a vehicle, a sales strategy and logistics, because they do not have a vehicle, a sales strategy and logistics, they turn to intermediaries who, having greater knowledge of market demands, acquire the products at low prices to take them to the markets and sell them at a higher price, and obtain profits from the price differences, without having invested in the harvests.

As a result, according to the responses of the farmers surveyed, more than half said that they are opting to take their produce to the final consumer in order to make a better profit, compared to one fifth of the respondents who indicated that they continue to sell their crops to middlemen. Intermediaries have the advantage over farmers in that they are registered with the tax authorities and issue invoices, an essential requirement for supermarkets and shops to buy agricultural products. The farmers surveyed indicate that their harvests have the destination shown in Figure 4.

Box 4

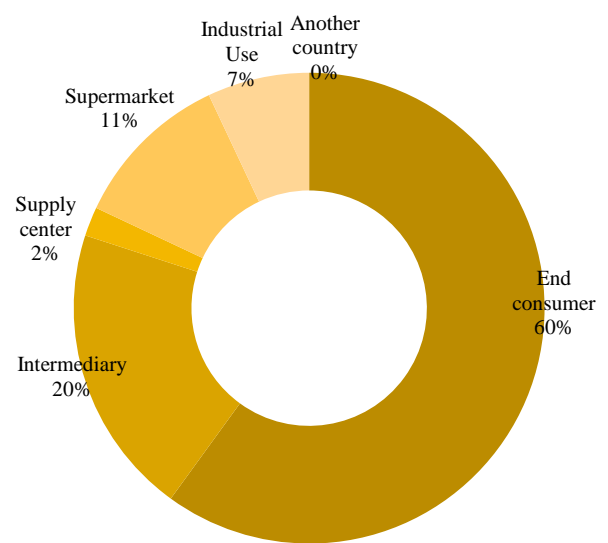


Figure 4

Destination of the agricultural production of the surveyed farmers

Source: Own elaboration based on survey of agricultural producers

The third problem that the farmers surveyed reported to be facing, based on the percentage of responses in the survey, is the loss of crops due to pest invasion and the management of production. The agricultural producers' statements coincide with those of the agricultural representative of the Secretariat of Agriculture and Rural Development, Yucatan Delegation, who stated in an interview that due to the type of soil in the southern region, greater investment in infrastructure and inputs is required to allow farmers to manage production in a more controlled manner, and thus achieve a greater volume of quality production that meets the standards expected in consumer markets.

This highlights the need for the government to work more closely with farmers on technology transfer projects to instruct them in techniques, procedures and protocols that will enable them to better control their crops in the face of external agents such as the environment in which they grow their crops.

In summary, the three main operational problems reported by the farmers surveyed in the municipalities of Muna and Samahil were the high cost of the inputs required for the crops, the difficulty producers have in marketing agricultural products, and the loss of crops. The above can be seen in Figure 5.

Box 5

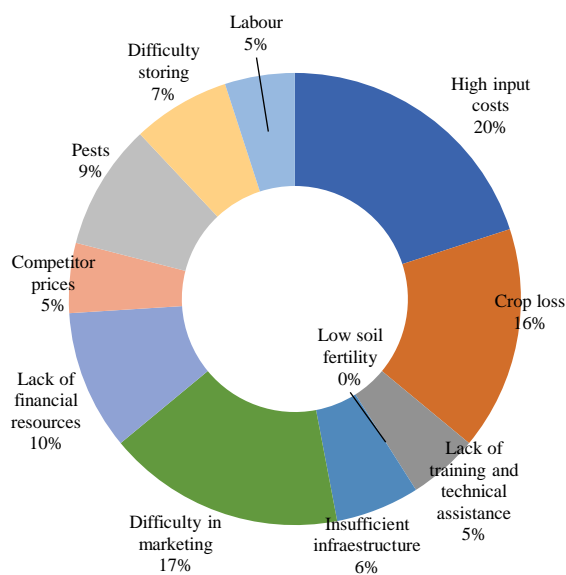


Figure 5

Destination of the agricultural production of the surveyed farmers

Source: Own elaboration based on survey of agricultural producers

Based on the operational problems detected in the research study carried out through the survey of farmers and the interview with the head of agriculture at the Secretariat of Agriculture and Rural Development Yucatan Delegation, and in accordance with the findings of the literature review, it was confirmed that due to the low profitability of agriculture for families, farmers tend to seek income in other ways to cover the basic needs of their families.

The head of agriculture at the Secretariat of Agriculture and Rural Development, Yucatan Delegation, pointed out that given the low profits that agriculture can generate, many farmers earn additional income by selling their labour, clearing land, or as employees of private companies.

On the other hand, the farmers surveyed stated that they obtain other income from the salaried work of their wives and/or husbands in the case of women farmers, or from other members of their families, such as their sons, daughters, nephews, nieces and nephews, among others. This can be seen in Figure 6, which shows the other sources of income of the farm workers.

Box 6

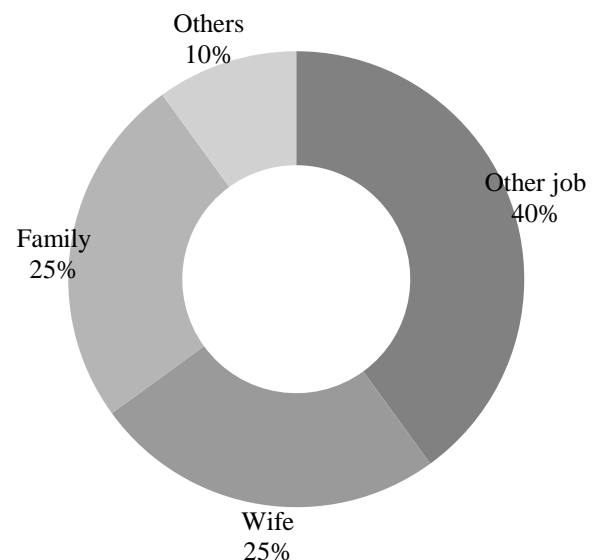


Figure 6

Sources other than agriculture from which the surveyed producers obtain income

Source: Own elaboration based on survey of agricultural producers

Conclusions

Farmers are getting older and the new generations are not showing interest in continuing the activity, demotivated by the variable incomes and the high risks and costs involved in farming. What Ceballos and Nopal stated in the introduction is confirmed when they found in the survey of agricultural producers that the average age of the farmers is 50 years old, observing that there are fewer and fewer young people in the countryside, because as the new generations have the possibility of migrating to the cities, they do so, as they hope to obtain work and a more stable and better income.

This is backed up by the statements of the Secretary of Agriculture of the Secretariat of Agriculture and Rural Development Yucatan Delegation, who in an interview indicated that farm workers are opting for temporary jobs that allow them to obtain additional income to support their families. The construction of the Mayan Train is an example, as several farm workers have joined the construction site to work and earn income.

Women's participation in agriculture is increasing, as the results obtained in the survey of farmers in Muna and Samahil are very similar to those reported at the national level by INEGI, with the difference that those presented by INEGI show a slightly higher percentage of women who are engaged in agriculture and are also heads of household. Women farmers are setting a precedent in this important economic activity, as their participation is increasingly active.

With regard to the formal administration of the production units, it was found that more than 80% of the agricultural producers do not keep records of what they produce, spend and sell, which does not allow them to see clearly whether their economic activity is profitable or not, i.e. whether they are making profits, losses or only recovering what they invest to raise the crops. Even when part of the agricultural products harvested is for self-consumption, it is expected that the surplus is sold, generating a profit for the farmers after covering their costs. However, not having control of what is earned from the sale of the harvest and what is spent to produce it, through the documentation of this information, leaves the farmers blind to make decisions about their operation.

There was agreement in the literature that the main operational problem faced by agricultural producers is the high cost of production (inputs) required to raise crops, which includes the purchase of seeds, fertilisers, insecticides and others, which are sometimes priced in dollars and increase in price as the dollar rises.

Both Avila and INEGI highlight this as the main operational problem in the Mexican countryside. The survey of agricultural producers reported exactly the same problem as the main one. This shows that it is a widespread problem, and a brake on the growth of agriculture.

The second operational problem reported by the farmers addressed in the survey was the difficulty producers have in marketing their harvests once they have been harvested. This operational problem coincides with Ávila, and is largely due to the lack of marketing logistics that would allow farm workers to take their product to the final consumer and obtain the best price for it. However, in the survey, more than half of the producers are managing to reach the final consumer, in an attempt to make the activity profitable.

The third operational problem faced by producers in Muna and Samahil is the loss of harvests due to natural causes such as climate changes, pests or contamination, which coincides with the national report by INEGI, which indicates the problem that harvests present when they are affected by climate changes. This highlights the urgent need to instruct agricultural producers in the use of techniques, procedures and technology to have greater control over their production and control processes.

Even with all the operational problems presented by agricultural producers, the vast majority try to remain in the activity by tradition, business or self-consumption, however, it is a reality that more than half of them have other sources of income, since agriculture alone does not generate enough income to support a family, so the wife and children have to work to generate additional income.

This problem may become more acute in the coming years as cities continue to grow and move closer to agricultural production units, since it will be easier for rural workers to turn to the cities for salaried and stable employment than to struggle to maintain their work in the countryside. There is a need for greater organisation among agricultural producers, which could be spearheaded by the ejido commissioners, in order to group together to purchase inputs at wholesale prices, which each producer normally buys at a high retail price. Once the agricultural producers are organised, they should approach the federal and state agricultural authorities to express their needs in terms of training and technical assistance for the preservation of crops in the face of climate change, pests and contamination, so that they can be attended to in an effective and timely manner, avoiding duplication in agricultural support programmes.

The logistics of distribution of agricultural products could be left in the hands of the organised farmers themselves, to sell their products directly to local markets, overcoming the intermediation that makes the product cheaper. The organisation of agricultural producers is essential if they wish to sustain themselves, as individual effort is not enough, when the needs in the countryside are ever greater and more diverse. This requires that farmers have more information and training in the administration of their production units, which will allow them to make better use of their resources, considering the possibility of insuring their harvests in the face of fortuitous environmental events that could put their crops at risk.

It is a reality that to the extent that the activity ceases to be profitable, the following generations will no longer be interested in continuing it, which will lead to the acquisition of food from other states of the country or even from other countries, taking away from the State the economic benefits that this activity generates. Agriculture as a primary activity is fundamental for human subsistence, which is why it must be strengthened, preventing more producers from becoming discouraged and gradually abandoning it, in order to seek employment in the cities, which will solve their economic needs in the short term.

While it is a reality that human beings seek immediate satisfaction of their needs through the resources available to them, it is also true that the gradual abandonment of the countryside represents a threat to any community, since its dependence on food suppliers increases the risk of shortages when they decide to rationalise or control them in the worst case scenario.

The abandonment of the countryside is not a novelty and is not only occurring in the Yucatan peninsula, but throughout the country, since the new generations do not see the countryside as a profitable alternative for producing food and making a living from its commercialisation, fuelled by the problems described in this research. For the new generations, salaried work has become a stable alternative for obtaining economic resources that allow them to satisfy their needs in the short and long term.

The findings found in this research not only confirm what is stated in the literature, but are also supported by the agricultural authorities, who are clear that not only economic resources are required in the countryside to produce, but also technical and cultural accompaniment that teaches rural producers how important their work is, but above all, that it can become profitable, as long as the challenges that agricultural activity represents are addressed responsibly and in a timely manner.

It is very important that the federal, state and municipal levels of government work in a coordinated manner in the design of programmes and policies in favour of the countryside, in order to avoid duplication of objectives and scope, but above all an inequitable distribution of resources, which leaves some agricultural sectors at a disadvantage. Agriculture is a fundamental economic activity for any society, and a latent commitment between community and government.

The Mexican countryside today demands priority attention beyond traditional programmes, in which rural communities are made aware of the importance of their work, accompanied by economic and technical support close to the farmers, which instructs them in the operation of their production units, as well as in their administration,

In which they are taught to document their work processes, quantify their successes and capitalise on their failures, as part of a learning process that motivates them and transfers to their children the desire to continue the work, because to the extent that agriculture allows producers to obtain an income that covers their needs, they will see the countryside as a serious profession, worth working for.

Statements

Conflict of interest

The authors declare that they have no conflicts of interest. They have no known competing financial interests or relationships with individuals that could have influenced the published article.

Authors' contribution

Zapata Aguilar, José Apolinar: Contributed to defining the idea of the research study, taking into account the importance of the problem addressed, wrote the problem statement, designed the methodology and participated in the analysis, discussion and drafting of the conclusions.

Ruíz López, Karen Alejandra: Contributed to the construction of the theoretical framework and the application of the survey to the selected sample. She participated in the analysis and discussion of the conclusions.

Cruz Díaz, Olga Libia: Contributed to the construction of the data collection instruments and conducted the semi-structured interview with the selected participant. She participated in the analysis and discussion of the conclusions.

Availability of data and materials

Data are available in the repositories and websites consulted.

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Abbreviations

INEGI: National Institute of Statistics and Geography.

SADER: Ministry of Agriculture and Rural Development

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