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Investigation note

Economic integration and sowing life in San Miguel de las Palmas

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Abstract

The sowing life program has benefited thousands of producers from several states in the country through monthly monetary support in exchange for planting certain crops. Such is the case in the state of Guerrero, where producers decided to plant mezcalero maguey, leading to a considerable increase in production; consequently, they are now looking for ways to market it. One of the communities interested has been San Miguel de las Palmas. Throughout 2023 and 2024, an impact research work was conducted in parallel with a training process for producers; through these activities, three alternatives for marketing agave were analyzed: selling maguey hearts, transforming the hearts into mezcal individually or producing and packaging mezcal collectively. After examining these options, it was detected that the only profitable option was to create a company that produces, packages and markets mezcal, under the producers' own management. By homogenizing processes and managing with quality standards, they will be able to market mezcal at a price of $400.00 L^{-1}, making producers achieve greater profits. These results ensure that producers obtain income similar to that provided by the sowing life program, which is expected to support new producers and new territories.

Keywords:

maguey, mezcal, strategy.

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Introduction

In 2021, 36.3% of the Mexican population was in poverty, a reduction of 5.6 points compared to 2018 (CONEVAL, 2023). This progress is linked to social programs such as sembrando vida (sowing life program, SLP), which, between 2019 and 2024, promoted agroforestry systems and economic support. By 2022, more than 720 million plants had been planted in plots and 548 million in nurseries (Gobierno de México, 2023). In Guerrero, 60.4% of the population lives in poverty (Data México, 2024). The SLP promoted staple and fruit crops, incorporating the mezcalero maguey since 2021 (Secretaría del Bienestar, 2023). In 2022, the state produced 39 033.81 t of agave in 22 municipalities, generating 1.5 million liters of mezcal, valued at 180 million pesos (SADER, 2020a; SIAP, 2022). It currently has 20 brands and exports more than 100 000 L to various countries (SADER, 2020b).

The municipality of Huitzuco de los Figueroa, with a warm subhumid climate (INEGI, 2024), produced a total of 351 900 L of certified mezcal in 2018, made by 30 producers (SIAP, 2018; CEMEZCAL, 2019). A significant part of production remains informal. The locality of San Miguel de las Palmas, with 1 194 inhabitants, has a high maguey production and faces uncertainty due to increased harvested volume. Ninety-six percent of producers are engaged in corn and bean production, and 60% in livestock farming. With the SLP, around 25 producers planted fruit trees, such as guava and mango (Gobierno del Estado de Guerrero, 2024). The program has improved income through monthly monetary support of $6 000.00, in addition to promoting fruit and timber trees. Despite this, support is not assured in the long term. The increase in agave supply has reduced the prices intermediaries pay, generating uncertainty and limited revenues. For this reason, producers recognize the need to look for more favorable marketing alternatives. This need not only refers to its current production but also to the additional volume that will be generated thanks to the program.

Given the meager profits from marketing maguey and mezcal in small-scale units, a solution was identified in articulating value chains, an approach supported by experts such as Cerroblanco *et al*. (2021). Considering the literature advocating the value-chain integration approach, it was decided to conduct an impact research on specific problems. The research, funded by the former National Council of Humanities, Sciences, and Technologies (CONAHCYT) by its Spanish acronym, currently the Secretariat of Science, Humanities, Technology, and Innovation (SECIHTI), by its Spanish acronym, sought to recover the social commitment of science through the participation of students and academics. This made it possible to study various production chains, including that of mezcalero agave, in which it was observed that increased production requires new marketing channels. The study aims to identify and assess alternatives for the sale of agave and its derivatives to increase producers' income in San Miguel de las Palmas and eventually, replace the SLP support, promoting sustainable economic development through economic integration.

To achieve this, it is considered essential that producers understand the benefits of integration and work with academia on projections that support decision-making and project implementation, highlighting training as a key tool for transforming their reality. Hence, the research work was parallel to the training work. The training process was developed based on the work-learning method (Duch *et al*., 2006; Malagón, 2011; Garza, 2013), which consists of training directly within the work process. The economic and financial analysis of these options is carried out collaboratively with the producers through a previous training process. To achieve this, workshops were designed and held with maguey producers, both affiliated and non-affiliated with the SLP, to diagnose, identify marketing options and conduct the corresponding economic and financial analysis.

In the case of small producers, their integration can be analyzed from different approaches (Lundy *et al*., 2004). This research adopts the concept of economic integration proposed by Garza *et al*. (2018), which coincides with the value chain approach in terms of the importance of giving the product an added value that gives it an advantage to position itself in the market and we establish a difference in terms of the role of small producers in the chain. A value chain can be constituted by keeping producers only as suppliers. This may represent a certain advantage for them insofar as it assures them of a market, but it continues to keep them in the link of greater risk and lower profit margins.

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The interest in promoting value chains is also shared by international organizations such as CEPAL (1994). This institution stresses that strengthening production chains can reduce inequality by improving producers' incomes and balancing added value.

Between 2023 and 2024, the maguey and mezcal production chain was analyzed in three phases. In the first, workshops were held with 28 producers to collectively diagnose the chain and confirm that their low income derives from their participation limited to the weakest link: primary production. The diagnosis was complemented with questionnaires that allowed us to obtain details on cultivation, mezcal production and marketing, as well as to identify other actors in the chain. This information was used to seek economic and financial bases to make the activity more profitable, offering producers tools to reduce costs, improve their prices and better position their products in the market. In academic terms, the objective was for producers to understand the advantages of being integrated into a value chain (Malagón, 2011). As a result of this first phase, the producers decided to evaluate two modalities of integration: selling maguey hearts by the tonne or producing artisanal mezcal.

The second phase was the evaluation of the viability indicators, of which three main ones were considered: the net present value (NPV), the benefit-cost ratio (BCR) and of course, the minimum acceptable rate of return (MARR) (Brealey *et al*., 2010); they are calculated as follows.

Net present value.

$$NPV = \sum_{t=1}^{n} \frac{Y_t - C_t}{(1+i)^t} - I_0$$

Benefit-cost ratio; BCR= total benefit/total cost; minimum acceptable rate of return; MARR= cost of capital + risk premium. The process allowed us to identify the necessary resources to produce maguey and mezcal and to formulate the investment project.

In the third phase, after the financial analysis, the results were presented to all producers to provide them with elements that would support their decision to move forward with economic integration.

The maguey producers of San Miguel de las Palmas

The study included 28 maguey producers from San Miguel de las Palmas, almost the entire locality; 82% of them are enrolled in the SLP and 71% were already growing agave before the program. Before the SLP, most producers sold maguey hearts at $8 000.00 t^{-1}, and since their maximum production was 2 t, their annual income was barely $16 000.00. Eighty percent of producers have produced mezcal independently for at least two years, with an average of 100 L per producer per year. In 2024, production increased to 150-200 L. Only a minority transform agave into mezcal, which is sold at $200.00 L^{-1} (on sales over 20 L) due to lack of certification, low quality, and dependence on 'coyote' intermediaries.

Marketing constraints affect most rural producers. According to the 2007 Agricultural Census, more than 98% of the RPUs are concentrated only in primary production and do not participate in processing or marketing (INEGI, 2007).

As for the group's composition, 93% of the producers are men and 30% already grew maguey and made mezcal before the SLP. Women represent only 7%; none of them produce mezcal, and they began planting after the program. Before the SLP, planting began with wild suckers and later with staggered suckering. With the program, established producers were asked to donate suckers to new producers.

Mezcal is made when the agave reaches maturity, between five and seven years of age. The factories, located in homes, have sheet-metal roofs, dirt floors, and concrete or brick fences and do not comply with the standard, which makes it difficult to obtain better prices. The sale is mainly to intermediaries who pay $200.00 L-1; 60% of the product is sold in bulk, while 40% is destined for self-consumption or exchange. Producers do not participate in transport or packaging.

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Assessing marketing options

In workshops with producers, three options for marketing agave were evaluated: selling hearts at \$8 000.00 t^{-1}, individually transforming the maguey into mezcal at \$200.00 L^{-1}, or creating a company that produces and markets artisanal mezcal. For this third option, a plant capable of processing 10 t day^{-1} for six months was projected, with an estimated production of 156 000 L of bottled mezcal. The company was designed under a democratic structure, in which producers would be owners with a limited participation in shares (Garza *et al*., 2018), distinguishing themselves from simple articulations between actors (Riveiro, 2005; IICA, 2018). In addition, it would aim to pay producers the highest possible price for their maguey hearts, an articulation considered effective against rural inequality (IICA, 2023).

A total of 48 producers decided to partner to form the company in order to turn their chain into a value chain with a market focus (Gereffi, 2001; Figueroa *et al*., 2012). The required investment amounts to \$33 410 979.00, financed with 80% credit and 20% contributions from partners. For the purposes of the financial analysis, external support was not considered. The company would operate with \$7 039 796.00 of equity capital and \$26 371 183.00 of credit. Each partner would contribute \$99 292.00 for fixed assets and \$38 059.00 for working capital (total \$137 350.00). The contributions total \$6 592 796.00, which are combined with a credit of \$19 064 000.00 for fixed assets and \$7 307 183.00 for working capital.

With the company in operation, producers could sell a tonne of maguey hearts at \$16 000.00, double the current price. The plant would comply with NOM-070-SCFI-2016, thereby improving marketing. The current price of mezcal is \$200.00 L^{-1}, but with the company, it could reach \$400.00. Even considering a 50% price drop -resulting in \$208.00 L^{-1} the company remains viable (Baca, 2010), as long as the market is maintained and quality is standardized.

The financial results confirm the viability of the economic integration approach proposed by Garza *et al*. (2018), allowing producers not only to participate in the mezcal chain but also to turn it into a value chain that significantly improves their income.

Viability and profitability indicators

The viability of the project of economic integration of producers, considering a reduction in the sale price of mezcal of \$208.00 L^{-1} (which implies an increase compared to the current price and a decrease compared to the market price), results in a profit margin twice as large for the producers. The main indicators of viability and profitability were an NPV of \$330 877.00 and a MARR of 29.1%. Likewise, a benefit-cost ratio of 1.0056 is obtained, showing the acceptance of the project.

Conclusions

Economic integration enables producers to obtain greater profits and ensure the sale of their products by forming a value chain that controls all links and generates added value. The results show that economies of scale and the appropriation of the chain are essential to sustain the income that currently comes from the sowing life program, guaranteeing stability even when it ends. In addition, the proposal would increase employment by 15%, boost the local economy, and reduce migration. Solving the marketing issue is key to avoiding dependence on abusive intermediaries; by controlling more stages of the process, producers will be able to access better markets and fair prices, thus strengthening a solid value chain.

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