PUBLIC INTERVENTION IN THE AGRI-FOOD SECTOR, PROCAFE-PIAC CASE (2015-2018)

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Abstract

Innovations, understood as activities incorporated into a productive system for its improvement, are related to the implementation of agricultural practices that benefited other producers in some variable of interest. Involving producers in their design and implementation represents an opportunity for their development and appropriation. This article analyzed the congruence of the innovations promoted by the Comprehensive Coffee Care Program (PROCAFE-PIAC) using the policy cycle approach. The objective is to identify lessons learned that may be useful in the design and operation of this type of initiatives. The problem and its respective causal complex were contextualized, based on information from articles, internal and official reports from PROCAFE-PIAC. The implementation was examined by identifying the actions reported with the use of the innovation adoption index, implemented by PROCAFE-PIAC. Finally, in the evaluation the results are discussed with indicators related to the objective of PROCAFE-PIAC. The problem and causal complex of PROCAFE-PIAC had as its narrative the drop in production due to the structure of the plantations and the incidence of Rust (*Hemileia vastatrix* L.), which is why the alternative was aimed at providing advisory services, support in inputs and renewal of coffee plantations. The actions promoted focused on the establishment of nurseries for seedling production, complemented with infrastructure and technological packages. For this reason, PROCAFE-PIAC obtained results related to productive aspects; However, the analysis indicates congruence between the objectives and the actions promoted.

Keywords: agricultural policy, public policies, coffee production, agricultural innovation, agricultural extensionist.

Introduction

Coffee is a crop belonging to a global value chain and one of the most important commodities in the world market; It is estimated that in Latin America 125 million people depend on it (Acosta, 2023). Coffee represents 38% of the total world market, within the classification of tobacco and spice stimulants (COMTRADE, 2020). Currently, coffee activity in Mexico is carried out in 14 states of the country (Sánchez, 2015), although production is concentrated in Chiapas, Oaxaca, Veracruz and Puebla with 84.6% of the total (SIAP, 2023). It is estimated that more than 280 thousand producers participate in coffee production, made up mostly of smallholders and indigenous people settled in marginalized areas, grouped in different local and regional organizations (Aguirre-Cadena *et al*., 2012).

The location of coffee-growing areas, poverty in producing areas combined with price volatility, the presence of diseases, climatic events, as well as the expansion and contraction of supply and demand have led to institutional initiatives to support production. of different kinds (Harvey *et al*., 2021), such as the agreement for inventory control with the International Coffee Organization (ICO). In the case of Mexico, with government initiatives, everything from institutional projects to strategic projects have been implemented. Such was the case of the Mexican Coffee Institute (INMECAFE), which brought together many producers and national production through the Economic Units of Production and Marketing (UEPC), participating in marketing directly from the producing areas (Perez- Akaki, 2013).

Given the need to compete in the free market, public policy was aimed at encouraging productivity, thereby favoring medium and large producers, which caused the polarization of production and relegated small farmers to social assistance programs. with the argument of economic viability (Fox & Haight, 2010). This shows that economic analysis has surpassed the areas of analysis for the definition of public policies (Aguilar, 2009).

When the new economic model was applied, focused on flexibility, a trade liberalization process began under the idea that boosting imports would generate the transformation of the agricultural sector into a more competitive and efficient one (Sánchez, 2014). After this and given the adverse scenario that was created with this action, the State intervened with actions to mitigate these effects on national agriculture, as public problems (Gómez & Tacuba, 2017). For the cultivation of coffee, it occurred through social programs and the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA now SADER), through investments in regional projects and direct allocation interventions that, far from representing an opportunity development managed to worsen poverty (Fox & Haight, 2010).

The most recent intervention by the State emanates from the Comprehensive Coffee Care Plan, which gave rise to PROCAFE-PIAC in 2014 with the objective

of increasing coffee productivity, operated under a model that included technical assistance services, subsidies for productive infrastructure and renewal of coffee trees, supported by diagnoses of the productive system and derived from the consensus of actors in the productive chain in the country.

The implementation of a program through the management of actors in the production chain with different roles makes it interesting to systematize this type of initiatives with the purpose of, from now on, having lessons learned, with the foundation of these with knowledge. acquired over a process of one or several experiences through reflection and critical analysis of its results (Luna & Rodríguez, 2011). Based on the fact that the comprehensiveness of a centralized intervention strategy allows the promotion of innovations consistent with the objectives pursued by the strategy with the application of public resources, the objective of this research was to analyze the congruence of the innovations promoted in the implementation of the PROCAFE-PIAC with elements of the diagnosis necessary for the design of a public intervention, and from there identify lessons learned that may be useful in the design and operation of current and future programs in the agri-food sector.

Methodological section

PROCAFE-PIAC operated in the period from 2015 to 2018 as a centralized innovation promotion strategy. It had coverage in 12 federal entities with the greatest coffee activity duly registered in the National Coffee Registry (PNC): Chiapas, Colima, Guerrero, Hidalgo, Jalisco, Nayarit, Oaxaca, Puebla, Querétaro, San Luis Potosí, Tabasco and Veracruz, in its initial phase. In 2016, it was included as a component of support for small producers; its coverage covered the 1,012 municipalities included in the National Crusade against Hunger and in the Development Poles, located in regions with productive vocation and potential. In this same year, the State of Mexico and Tabasco were included.

The information was analyzed with the public policy approach which, according to Arias (2019), is made up of five stages. The first indicated as the identification and definition of the problem; the second as the formation of alternatives; the third adoption of alternatives; the fourth as the implementation of the selected alternative; and the fifth as evaluation of results. For the purposes of this research, the contextualization of the coffee system and the problematization to place it on the public agenda were analyzed as elements of the design, which comprise the first three stages of the policy cycle indicated by Arias (2019); In this way, the analysis of the design, implementation and evaluation of PROCAFE-PIAC was integrated.

To identify the elements of the design, information from different sources was systematized (scientific articles, internal and official reports), reports, presentations and official statistics on coffee cultivation in Mexico (SAGARPA, SIAP, SIACON,

FAOSTAT and AMECAFE) were also included. In addition to information not published by the PROCAFE team that made it possible to elaborate the causal complex that the intervention is intended to address. The above allowed us to generate the problem tree around the context of the problematic situation of coffee in the country (Hernández-Hernández & Garnica-González, 2015), as well as the design elements and orientation of priority actions of the PROCAFE-PIAC.

For implementation, the databases generated by PROCAFE-PIAC were analyzed from the 14 federal entities with total coverage, with 18,790 observations. In this, its operation scheme, the main changes and the behavior of the activities were analyzed through the innovation adoption index (InAI) proposed by Muñoz *et al.* (2007). To do this, descriptive statistics were used (Infante-Gil & Zárate-de-Lara, 2012) to identify congruence between the objectives of the program design and its implementation.

In the evaluation, databases were used with variables related to the population served; characteristics of the Family Production Units (UPF) and the innovations promoted during the four years of implementation of the strategy. In addition, to compare the Baseline (LB) and a Final Line (LF) using the InAI as the main input of the actions promoted by PROCAFE-PIAC in the 2015 and 2018 period of program implementation, with the use of comparison of stockings (Infante-Gil & Zárate-de-Lara, 2012). Data processing was carried out with IBM SPSS Statistics (Version 22) computer software.

Results and Discussion

The results of this research were organized into four sections; In the first, the contextual situation of coffee is narrated and the actors for the formation of the agenda are identified (Casar & Maldonado, 2008) as elements of the design of PROCAFE-PIAC. It highlights the economic, social and environmental importance of the crop. The second analyzes the implementation of PROCAFE-PIAC that corresponds to the process in which the intervention was carried out. It analyzes the actions carried out and the objectives, the profile of the producers and the InAI indicators in each year of exercise. The third corresponds to the description of the internal monitoring of the strategy in which the main changes and results attributable to the operation are presented. The fourth section carries out a prospective analysis in relation to some particularities of the crop identified.

PROCAFE-PIAC design elements

Contextualization of the coffee production system

From the social point of view, when the program emerged, coffee cultivation occupied seventh position in terms of harvested area; highlighting its economic importance and social impact; since the coffee activity links, directly and indirectly, close to three million people and is practiced by just over 500 thousand producers (Chain-Guadarrama *et al.*, 2019). A high percentage of these are smallholders with properties of less than five hectares (98%). Of these coffee growers, 70% had areas of less than one hectare, and 2.6% had areas greater than five hectares (FIRA, 2015). In addition, coffee occupied 3.3% of the country's agricultural productive potential, and coffee-growing activity was registered in 13 states with a total of 1,672 municipalities; of them, 56.6% speak an indigenous language and represent 40% of coffee production (CEDERSSA, 2014).

The producers established themselves in areas classified as areas of high and very high marginalization, in the states of Chiapas, Veracruz, Oaxaca, Puebla and Guerrero, who concentrated 90% of the surface and the number of producers to the same extent. The highest number of hectares planted with coffee was reached in 2009, with just over 800 thousand hectares (SIAP, 2019), although with a downward trend, since by 2018 it decreased by around 100 thousand hectares (Figure 1). In the same

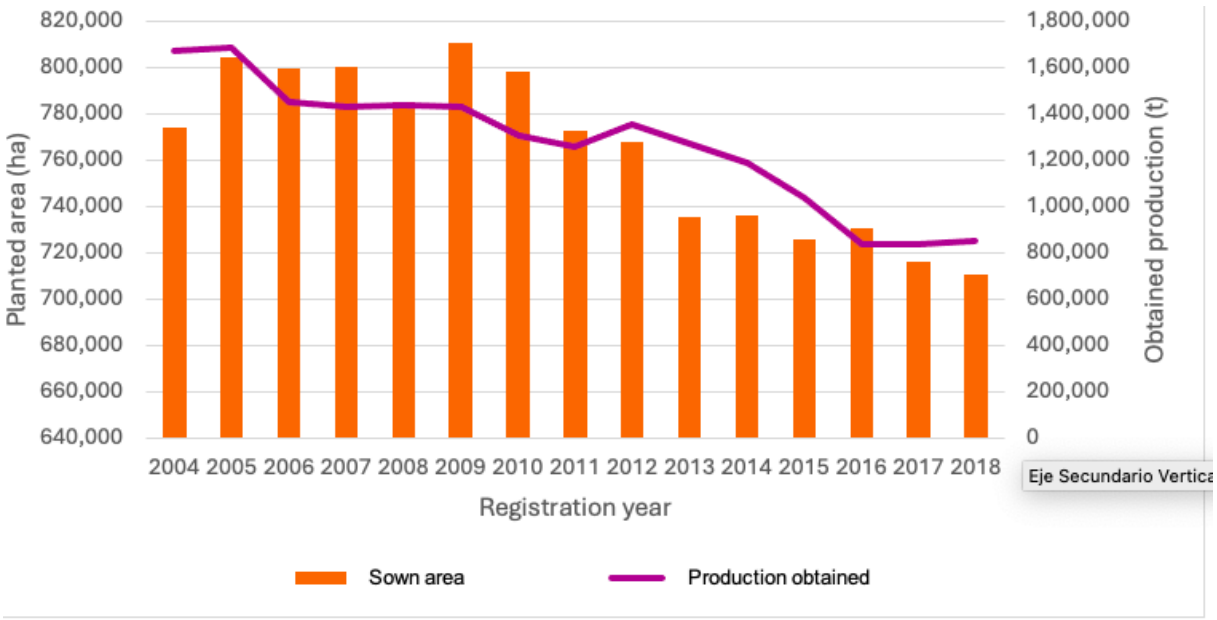

Figure 1. Area planted and coffee production obtained in Mexico in the period 2004-2018. Preparation with official SIAP data (2019).

way, the production obtained presented a downward trend, decreasing 49% between 2004 and 2016. It is also noteworthy that there was a slight change in this trend, between 2016-2018 (it increased approximately 2%).

On the other hand, historical production data from FAOSTAT (2018) reported for Mexico a production of 126,616 tons in 1961, with an increasing trend until 1990, the year in which it reached the highest value of the period. Starting in 1990, the production trend was downward and went from 440,000 tons to 153,794 tons in 2017, which represented a drop of 65%. In the period from 2011 to 2017, a drop in production of 35% was observed; That is, in these six years, more than half of the total produced since its highest record was lost (Figure 2).

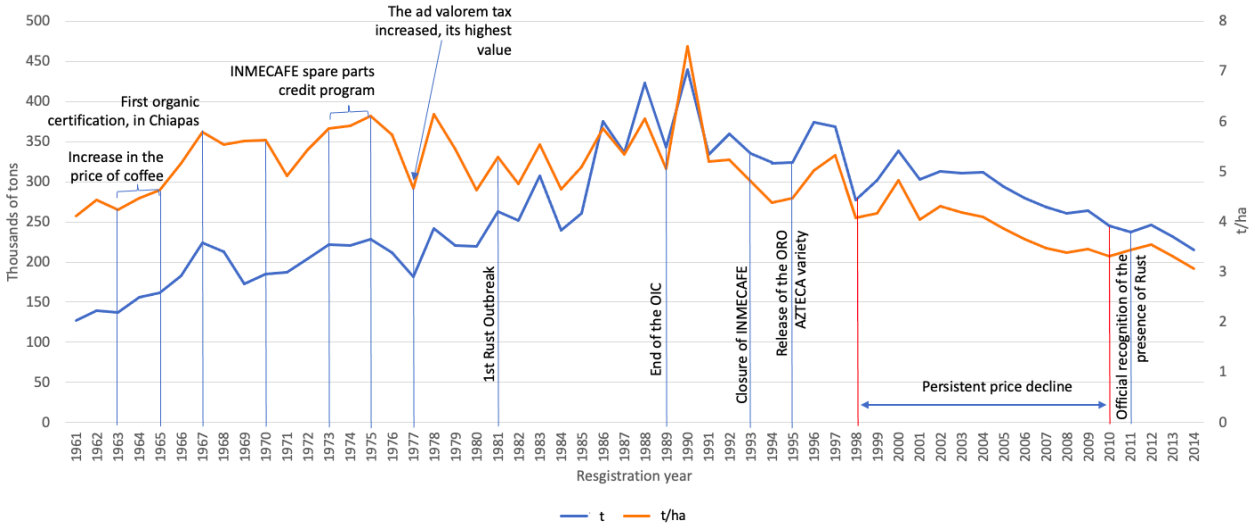

Figure 2. Evolution of coffee production and factors that affected production.
Elaboration with data from Aguirre-Cadena *et al.* (2012), Henderson (2019), Pérez-Akaki (2013), Sánchez (2015), Barrera (2017), FAOSTAT (2018) and SIAP (2019).

The drop in production was mainly related to the presence of coffee rust. According to records found, because of the measures taken regarding Mexico's participation in international coffee organizations and the intervention of the State, in 1941 and 1972 preventive measures regarding rust damage were recorded internationally. However, for Mexico it was not considered a threat, given that the climatic conditions did not favor its development. Therefore, rust outbreaks were related to temperature changes in all regions (Henderson, 2019).

According to Barrera (2017), the first rust outbreak recorded in Mexico was on July 11, 1981 in Soconusco, Chiapas, but it was not considered a threat to production.

In the 2011-2012 production cycle, Rust affected coffee production and was reflected in the 30% reduction in production attributable to this disease. Before the outbreak, classified as atypical, and because of the problems caused in other regions of Latin America, the production of improved varieties began in Mexico.

One of the varieties that best preserved the characteristics of coffee and adapted to the regions of Chiapas, the state where the presence of this disease began, was Oro Azteca. This variety was evaluated between 1986 and 1995 by INIFAP and obtained an average production of 4 t ha-1 of parchment coffee (in a range of 3.2 to 5.5 t ha-1), which meant 37% higher than the yield. of the Caturra Rojo variety (Barrera, 2017). However, the release of the variety was carried out under circumstances where rust was not yet considered a threat, in addition to the fact that the renewal of coffee plantations was scarce and low coffee prices prevailed, which made its adoption difficult by producers, and caused the area planted with this variety to not be significant until before 2012.

Agenda setting

Considering the problem described above, the causal complex was constructed and the problem of the coffee production system in Mexico was defined with the purpose of identifying the need posed to the State to include this issue on the agenda. As part of the public policy analysis, it is necessary to refer to the arguments of the problem faced and the possible consequences of not addressing it as a public problem (Aguilar, 2009).

This process sought the consensus of the largest number of actors in the coffee production system, to obtain a complete analysis and derive accurate alternatives to address the problem and its causes, as well as prevent or remedy its consequences. In this way, we sought to understand the causal complex that gave rise to PROCAFE-PIAC (Figure 3).

The systematization of the information generated, and planning exercises carried out by the technical team of PROCAFE-PIAC, pointed out as a central problem the decapitalization of the coffee producer because of the high production costs, the low prices that the producer received in the sale of the product, low performance and poor public policies. Combined, these factors caused producers to under tend their coffee plantations with the aim of migrating, first temporarily to obtain resources and invest in the next production cycle, waiting for prices to improve. If this did not happen, the migration would become permanent, thus affecting the abandonment of the plots and, consequently, causing a precarious generational transition. In addition to the fact that the low productivity related to these causes, in a context of climate change, becomes a threat to the worsening of poverty in coffee-growing regions (Cano *et al*., 2022).

In this causal complex, focused on the problem of the productive issue, it reinforces what was stated by Pérez & Echánove (2006) who indicate that because

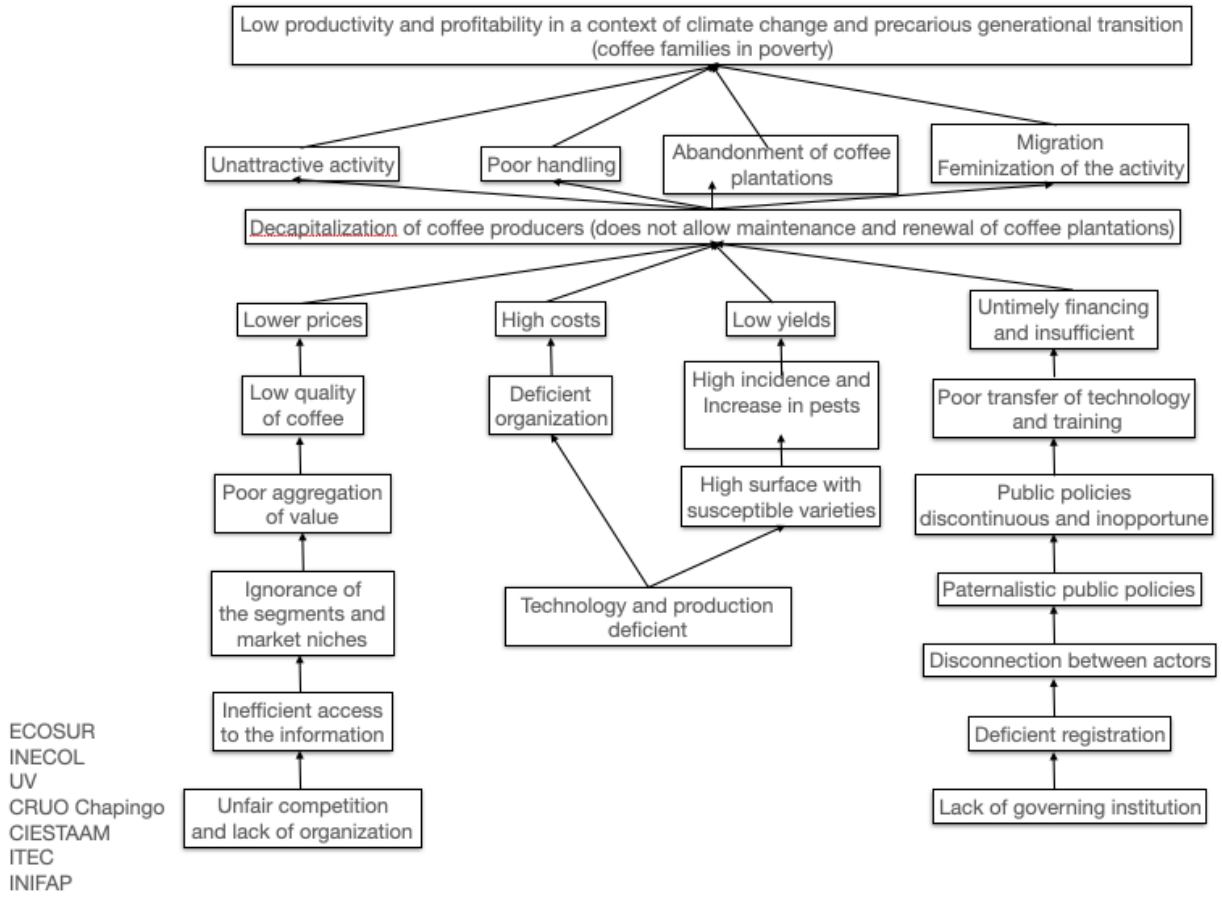

Figure 3. Problem tree of the coffee production system in Mexico. Preparation with data from the PROCAFE-PIAC Team.

of low prices the production costs of the crop are not covered, which causes the decapitalization of the producers. Because of this, coffee plantations are neglected and plagued, the quality of the coffee can decrease, and families look for alternative sources of income, among which migration to the United States is the most frequent. A coincidence is observed in the effects of the central problem. In addition, problems related to land tenure associated with internal and external migration are denoted; reflected in the agglomerations in cities or municipalities where people aspire to better living conditions

The importance of coffee, considering that coffee activity is carried out in marginalized and even indigenous communities, the importance as an economic activity in producing areas, the current opportunity in the face of climate change as an activity that provides a diversity of environmental services and of biodiversity conservation,

is considered of public attention and is reflected in the diversity of actors involved in the production of the aromatic. Furthermore, the multiple organizations that emerged for marketing purposes create a diversity of actors with the capacity to interfere and, in some, to veto the processes included in the formation of public policies (Figure 4).

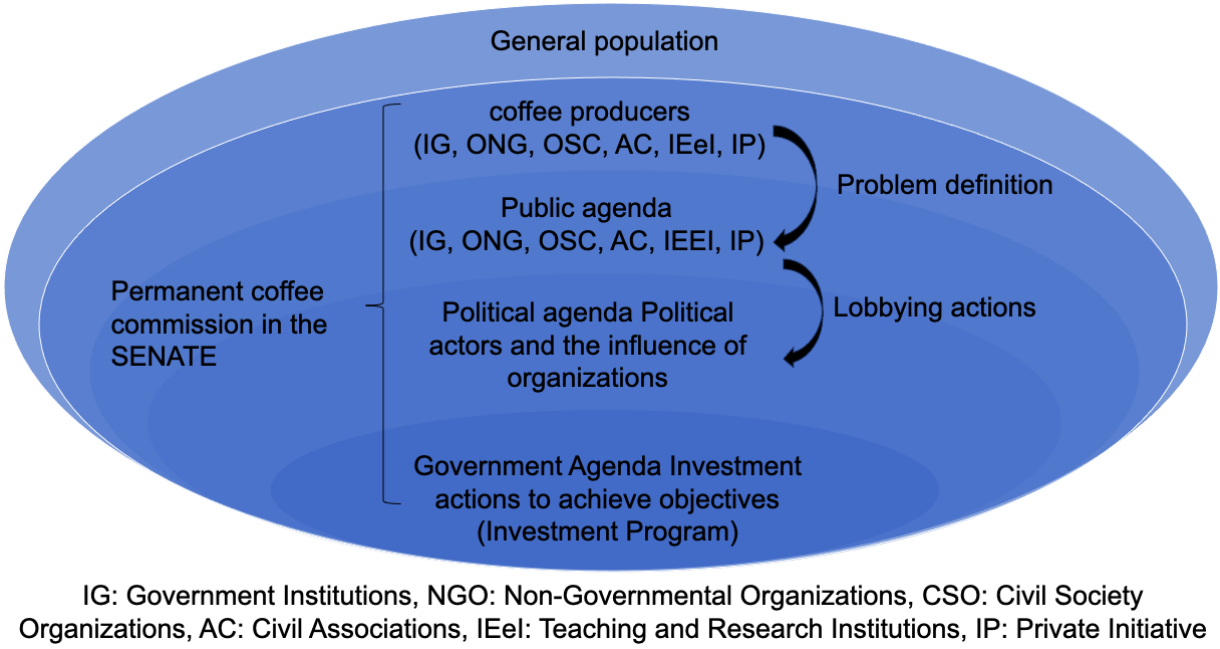

Figure 4. Formation of the government agenda that favored the origin of PROCAFE-PIAC. Adapted from Casar & Maldonado (2008).

As a result of a process of addressing a public problem, the comprehensive coffee care program (PIAC) was generated which, from five lines of action based on its specific objectives, sought to address the most sensitive demands of producers. In the design, PROCAFE was designated to carry out specialized technical assistance actions, and to identify needs to generate investment actions with the purpose of promoting the production of coffee plantations with areas less than five hectares. Promoted a series of innovations in accordance with the diagnosis of the productive structure (DEP) of coffee trees, in which priority was given to the renewal of coffee plantations as one of the essential needs to obtain plantations with productive potential.

The DEP carried out by the PROCAFE-PIAC team indicated that 67% of the productive structure of the coffee plantations needed an action or activity to improve their productivity. In contrast, the extinct Mexican Coffee Institute (INMECAFE) carried out a diagnosis, based on a sampling in nine representative delegations of

coffee activity in 1987 (Villaseñor, 1987), in which practically the same categories are considered. This was carried out with the purpose of knowing the expectations and challenges of national coffee growing before the upcoming commercial opening at that time. When making a simple comparison between the DEP INMECAFE-1987 and PROCAFE-2015, it is observed that the data reflect a practically similar productive structure of coffee trees (Figure 5).

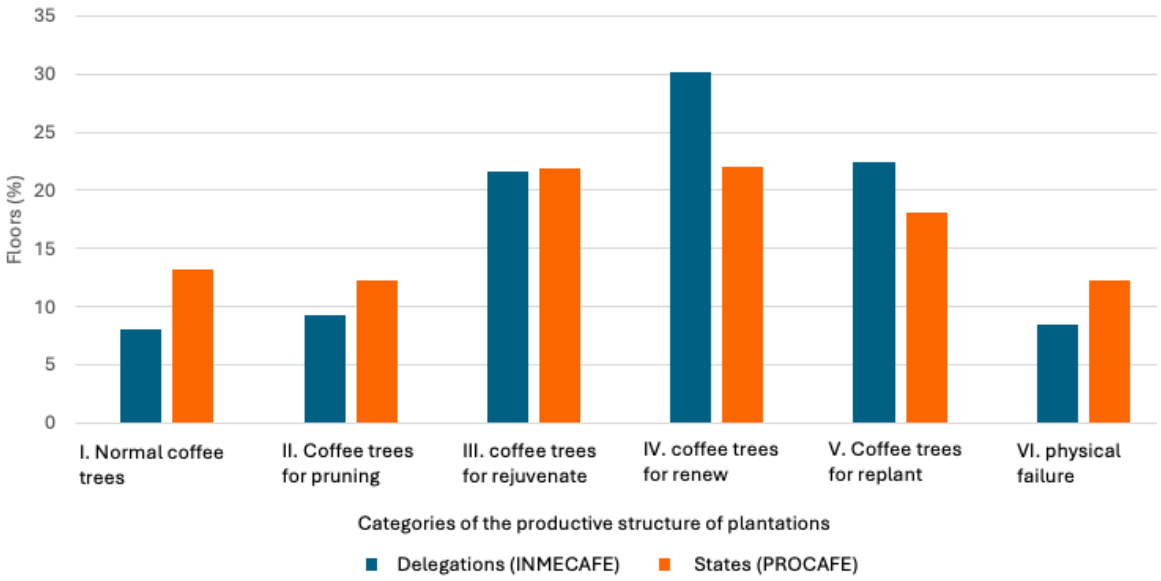

Figure 5. Comparison of the DEP carried out by PROCAFE and INMECAFE. Elaboration with data from PROCAFE (2015) and Villaseñor (1987).

Based on the results of DEP-INMECAFE-1987, in coincidence with the actions of PROCAFE-PIAC-2015, it is necessary to address rejuvenation, renewal and replanting to increase yields. In this way, SAGARPA generated the PIAC, which after its implementation contributed to the implementation of PROCAFE-PIAC as the person responsible for training and technical assistance for coffee production. This was created with the objective of increasing production and competitiveness, to obtain 4.5 million 60 kg bags in the 2018-2019 cycle.

Implementation of PROCAFE-PIAC

Once the problem was agreed upon and the objectives of PROCAFE-PIAC were declared, the implementation of the program was organized with the producers with the establishment of Technological Innovation Modules (MIT), through which

innovations were promoted, with the aim of improving the structure. coffee plantation fundamentally with the adoption of innovations for the care and management of coffee plantations. In these collective modules, certified nurseries were established to supply quality, disease-resistant plants, to renew the plantations. Technological packages that included inputs for production were also provided.

PROCAFE-PIAC declared five lines of action for comprehensive care of the crop (Figure 6), when contrasting them with the aspects that influence coffee productivity, it is observed that the actions carried out by the program are mostly related to production.

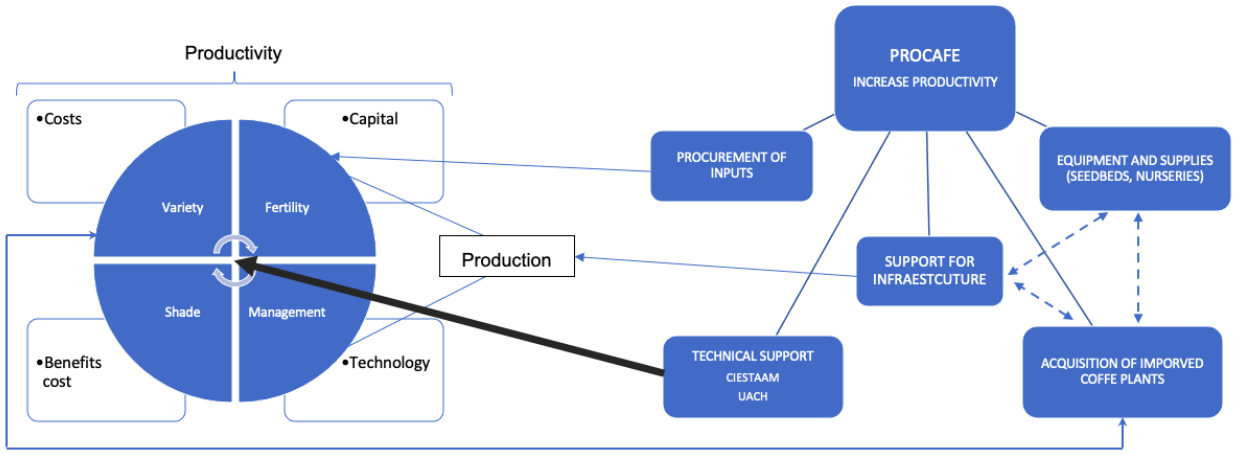

Figure 6. Strategic lines of PROCAFE and the factors that affect coffee production and productivity. Preparation with data from PROCAFE (2015)

The PROCAFE-PIAC intervention model, consisting of technical support, carried out a DEP for each MIT, as a fundamental aspect of the start of activities, which generated a list of innovations to implement and that would have to be agreed upon with the producer to define a work plan. Based on these diagnoses and the work plans with objectives and goals, an intervention strategy for technical support was generated that included workshops, training activities, care and follow-up visits, among others.

Promotion of innovations

The training component was implemented to fulfill plans directing actions to improve coffee plantations. These actions were integrated with the purpose of improving production parameters to obtain increases in production. For the second year (2015), a catalog of innovations was implemented that concentrated the actions

implemented at the national level. PROCAFE-PIAC had an action monitoring system that allowed timely assistance to the training needs of technicians. This process and the concentration of products are the longest, because this part focuses on carrying out the planned activities, both for the PROCAFE-PIAC team and for the technicians and participating producers.

Their actions were aimed at integrating technological packages, with digital tools for shadow monitoring and management innovations. In the latter, management actions involved sampling to diagnose rust, borer and physical failures for a diagnosis of each plot. From this, actions to care for the coffee plantation were planned, which included renewal plans. Infrastructure support was concentrated on the installation of nurseries with inputs and improved plants for group production and most of its actions focused on productive activities.

Producer profile

The population served by PROCAFE-PIAC met the selection criterion of having areas less than five hectares. The ages of the producers ranged between 53 and 59 years, with an average schooling of three years and practically similar for the states of Veracruz, Puebla, Chiapas and Oaxaca, which do not present significant differences ($P < 0.1$). The average coffee production experience was 30 years, and significant differences were identified in the five main producing states ($P < 0.1$).

The population served, in general, were older adults and, by relating their age to years of experience, the age of the coffee plantations was reflected. This aspect is relevant given that, when implementing technical support strategies, considered as productive technological packages, a knowledge transfer scheme is implicit for their implementation. This represents an additional challenge to the reality of cultivation because it concerns older adults (Naranjo, 2004).

The actions prioritized from the DEP correspond to the main innovation promoted in the first year of implementation of PROCAFE-PIAC. For the second year, they focused on renewing the coffee plantations (fertilization) and, in addition, actions that were considered to contribute to preventing and combating coffee rust (fertility, pest and disease management, management of productive tissues and shade management).

The innovation adoption levels in Table 1 highlight the positive increase in adoption levels for each year of the intervention. However, in a transexennial care scheme, innovations should not grow continuously with the same trend; That is, in a monitoring scheme with defined goals, it is necessary to advance various actions to consolidate objectives. The apparent trend in the results indicates incremental coverage.

Table 1. Comparison of InAI by category for each year of PROCAFE implementation.

InAI/Category	2014-2015	2015-2016	2016-2017	2017-2018
Seedling production	0.0743[d]	0.1511[c]	0.2417[b]	0.2567[a]
Renewal	0.1449[d]	0.2869[c]	0.4633[b]	0.5205[a]
Soil and water conservation	0.0704[d]	0.1157[c]	0.1696[b]	0.1807[a]
Fertility	0.0370[d]	0.0615[c]	0.1005[b]	0.1164[a]
Integrated pest and disease management	0.0533[d]	0.0829[c]	0.1112[b]	0.1205[a]
Fabric renewal	0.0949[d]	0.1343[c]	0.1739[b]	0.1873[a]
Shade	0.0696[d]	0.0999[c]	0.1354[b]	0.1495[a]
Organization	0.0507[d]	0.0805[c]	0.1142[b]	0.1287[a]
Harvest	0.1038[d]	0.1422[c]	0.1856[b]	0.1977[a]
Good processing practices	0.1133[d]	0.1432[c]	0.1743[b]	0.1882[a]
Diversification	0.0197[d]	0.0244[c]	0.0306[b]	0.0349[a]

*Different literals indicate statistically significant differences.
Preparation with data from PROCAFE 2015-2018.

The plant production category changed in the years of implementation, attributable to the fact that the coffee plantations have already surpassed their productive age, an action in line with the objectives pursued by the program. The adoption of the renewal plans was incremental, and it can be inferred that in the last year of the strategy there were plants for renewal.

In this context, it is of interest to mention the increase of InAI in soil and water conservation actions, which went from 7% to 18% at the end of the intervention. Given that these actions represent an opportunity for producers who may receive a premium for some certification that contemplates the adoption of practices of this type in coffee production processes (coffee practice, UTZ, among others).

Assessment

PROCAFE-PIAC activities followed four phases for their implementation. The first consisted of the preparation and registration in the DEP monitoring system, by the technicians of the established MITs. The second with the concentration of the MIT plans to systematize and verify the congruence of the plans and the DEP for the design of a training strategy and annual monitoring, by the PROCAFE-PIAC technical team. The third began with the implementation of the work program based on goals and objectives set in the MITs with national coverage. And the fourth phase began at the close of the annual cycle with the concentration of products that sometimes redirected or rethought the plans to achieve the general objective of the strategy.

This process allowed the integration of the catalog of innovations that directed the interventions of the technicians based on the objective of the program. This scheme is considered a contribution of a centralized advisory and training scheme, which facilitates feedback on actions. This is attributed to the change in the implementation of innovations

This promotion model to adopt innovations managed to improve InAI in the coffee-growing regions of the country, through actions originating from productive diagnoses in the MITs. The categories that reached the highest values are related to the increase in coffee plantation production (Table 1). The analysis of the intervention areas of PROCAFE-PIAC and the factors that affect production and productivity, show that the key actions are focused on productive aspects.

However, addressing actions from this approach has been insufficient, failing to observe sustained changes in the productive structure of coffee trees in the last 30 years. Therefore, it is inferred that the implementation of programs aimed at increasing productivity without reinforcing other aspects is not enough. According to Vázquez-López *et al*., (2017), it is important to consider that the reality of coffee production is immersed in productive and economic diversification as a way of life for producers.

All this reinforces what was stated by Rivera (2022) about interventions to increase competitiveness, who argues that this involves aspects beyond productive ones. Therefore, in future interventions with similar purposes, it is advisable to include actions to strengthen and link to the market. As well as the integration of activities that allow obtaining additional income with certifications that integrate incentives, through the implementation of environmentally friendly practices; as an alternative to mitigate the effects of climate change and, in this way, improve the adoption of innovations that increase the competitiveness of the coffee product system. In this regard, Márquez *et al.* (2024) argued the importance of the development of supply schemes for the development of coffee producers in producing areas, through mutual gain schemes, meeting consumer needs related to the demand for quality with environmental responsibility, compatible with the productive context of the country's coffee plantations.

Prospective analysis

Currently, the challenges that climate change poses for agricultural production are measured in areas such as water scarcity, the reduction of areas suitable for agricultural production and global warming. Against this backdrop, authors such as Godínez (2023) point out the importance of coffee production in traditional shaded systems as an important response mechanism to confront the impacts of climate change at a global level. In the case of PROCAFE-PIAC, the promotion of innovations related to the improvement and conservation of these characteristics

of production such as soil and water conservation, shade management, integrated pest management, diversification and conservation of biodiversity. The above could support coffee production systems related to quality production.

In general, and derived from the productivity approach, practices such as the introduction of improved varieties, the application and use of agrochemicals, in addition to the modification of spaces for intensive production, have been promoted for coffee cultivation. In the approach to promoting innovations, the maintenance of coffee trees, the increase in planting density, the addition of shade, the conservation of soil and water, productive diversification, diversification of shade with crops of value for the producers and the use of organic fertilizers. These promoted actions are related to appropriate management for the conservation of the benefits of biodiverse production (Harvey, 2021) and therefore more in line with the reality of national production, even when the focus of production was productivity.

According to Canet *et al.* (2016) who relate rust outbreaks to temperature increases in producing regions, the latter approach attributable to rust control in Mexico, in the interventions carried out to serve the coffee sector it is desirable to integrate the characteristics of the coffee systems that It involves different environmental services and thus gives the importance of cultivation at a national and global level. Considering also that of the 12.5 million coffee producers in the world, 95% are small producers, promoting activities of this nature would allow a favorable contribution to the impacts related to the increase in temperature of climate change (Rivera-Silva *et al.*, 2013). In this sense, the PROCAFE-PIAC strategy addressed topics sensitive to the reality of national cultivation, and for future interventions it is advisable to integrate topics of transformation, quality production and marketing from biodiverse production.

Conclusions

Based on the analysis carried out, a relationship was observed between the context that narrates the causal complex and the actions carried out in the implementation of the PROCAFE-PIAC program, as a component of advice and training in the promotion of innovations and the actions carried out. These actions are framed in the attention of phytosanitary problems and the nature of agricultural technologies indicated in strategic plans, with the difference of centralized implementation. In addition to developing plans together with the population served, directing the implementation of actions with monitoring and technical support. Therefore, it is inferred that the actions developed are in correspondence with what was proposed in the design.

Regarding implementation, it was observed that the population served complied with what was established in the program guidelines. The actions promoted by

PROCAFE-PIAC were consistent with the reality of national coffee trees. It should be noted that the productive structure is a fundamental part of achieving productivity, but it is not the only variable. However, it is considered that the actions undertaken from the design elements of PROCAFE-PIAC are consistent and developed necessary actions to achieve the general objective set out in its design. The centralized strategy was adapted in a timely manner to the needs of the coffee plantations in the producing areas, and demonstrates incremental actions related to the issue of coverage. The implementation of a catalog of innovations allowed the implementation of actions aimed at meeting its objectives.

Regarding the evaluation, feedback points are observed in the implementation of PROCAFE-PIAC at relevant moments of execution. These monitoring schemes allowed the directing of actions based on the objectives of the program, reflected in the implementation of the catalog of innovations. The evaluation was aimed at improving operational aspects and targeting objectives. The strategy did not transcend the transformation and marketing aspects, this is related to the need to meet the increase in productivity with coffee plantations that require attention before thinking about the transformation.

Given the commercial environment in which coffee activity is carried out, in future interventions it is advisable to consider that actions aimed at increasing production imply greater supply and, consequently, favor lower prices. Therefore, it is desirable to intervene to improve the sector with foreign trade, internal marketing and tax policy actions. This process involves inter-institutional coordination beyond the allocation of resources, to achieve the development of coffee activity, guiding development on market incentives.

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