

Original article



Family farming approach for local development, support from the University to the Government

Enfoque de agricultura familiar para el desarrollo local, el acompañamiento de la Universidad al Gobierno

A abordagem da agricultura familiar ao desenvolvimento local e o apoio da Universidade ao Governo

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ABSTRACT

Globally, family farming produces approximately 80% of the food consumed worldwide. Through the United Nations Decade of Family Farming, a global call has been issued for its strengthening. Family farmers are indispensable to the sustainability of local development goals in Cuba, particularly in municipalities where agriculture constitutes the fundamental economic activity. While universities manage science, technology, and innovation -simultaneously assisting the Government in planning and implementing sustainable development actions- there remain gaps in the informational and scientific support regarding the social reproduction of this economic subject. Despite explicit government demands, gaps persist, including overlooked themes and significant absences in development planning. This paper aims to propose a family farming approach for sustainable local development planning by designing indicators and university-led support measures. These tools are intended to facilitate the integration of the Decade of Family Farming into government strategies.

The methodology employed techniques such as documentary analysis and structured interviews. The results yielded indicators that demonstrate both applicability across a diverse range of family producers and the importance of an' expeditious, visible, and efficient incorporation of the family farming approach into Cuba's local development strategies, plans, and programs. Finally, specific actions were formulated to enable university accompaniment in achieving this objective.

Keywords: Cuba; decade for family farming; municipal agricultural development; development strategy; peasant families; indicators; sustainability; family units of agricultural production.

RESUMEN

A nivel mundial la agricultura familiar produjo alrededor del 80% de los alimentos que se consumen. A través del Decenio de la Agricultura Familiar, las Naciones Unidas realizó un llamado para su fortalecimiento. Los productores familiares son indispensables para la sostenibilidad del desarrollo local al que aspira Cuba, sobre todo en aquellos municipios donde es la actividad económica fundamental. Desde las universidades se gestiona la ciencia, la tecnología y la innovación, a su vez, se acompaña al Gobierno en la planificación e implementación de acciones para el desarrollo sostenible. Sin embargo, existen vacíos en el respaldo informativo y científico sobre la reproducción social de este sujeto económico. Si bien ha sido un reclamo gubernamental explícito, aún persisten brechas, temáticas poco visualizadas y ausencias importantes en la planeación del desarrollo. El presente trabajo tiene como objetivo proponer un enfoque de agricultura familiar para la planeación del desarrollo local sostenible mediante el diseño de indicadores y medidas de acompañamiento universitario que faciliten la integración del Decenio de la Agricultura Familiar en las estrategias gubernamentales. Se utilizaron técnicas tales como el análisis documental y la entrevista estructurada. Los resultados aportaron indicadores que muestran tanto, la posibilidad de aplicarse a la diversidad de productores familiares, como su importancia para la incorporación expedita, notoria y eficiente del enfoque de agricultura familiar en las estrategias, planes y programas de desarrollo local en Cuba. Se formularon acciones que permiten el acompañamiento de la Universidad con este fin.

Palabras clave: Cuba; decenio para la agricultura familiar; desarrollo agropecuario municipal; estrategia de desarrollo; familias campesinas; indicadores; sostenibilidad; unidades familiares de producción agropecuaria.

RESUMO

Globalmente, a agricultura familiar produziu aproximadamente 80% dos alimentos consumidos. Por meio da Década da Agricultura Familiar, as Nações Unidas apelaram para o seu fortalecimento. Os agricultores familiares são essenciais para a sustentabilidade do desenvolvimento local almejado por Cuba, especialmente nos municípios onde essa atividade é fundamental para a economia. As universidades gerenciam ciência, tecnologia e inovação e, por sua vez, apoiam o governo no planejamento e implementação de ações para o desenvolvimento sustentável. No entanto, existem lacunas no apoio informativo e científico referentes à reprodução social desse ator econômico. Embora essa tenha sido uma demanda explícita do governo, ainda persistem lacunas, questões sub-representadas e ausências significativas no planejamento do desenvolvimento. Este artigo tem como objetivo propor uma abordagem da agricultura familiar para o planejamento do desenvolvimento local sustentável por meio da elaboração de indicadores e medidas de apoio universitário que facilitem a integração da Década da Agricultura Familiar nas estratégias governamentais. Foram utilizadas técnicas como análise documental e entrevistas estruturadas. Os resultados forneceram indicadores que demonstram tanto a aplicabilidade da abordagem à diversidade de agricultores familiares quanto sua importância para a integração rápida, significativa e eficiente da agricultura familiar em estratégias, planos e programas de desenvolvimento local em Cuba. Ações foram formuladas para permitir que a Universidade apoie esse processo.

Palavras-chave: Cuba; década da agricultura familiar; desenvolvimento agrícola municipal; estratégia de desenvolvimento; famílias de agricultores; indicadores; sustentabilidade; unidades de produção agrícola familiar.

INTRODUCTION

Agricultural production is vital for the development of nations. Family farmers produce around 80% of the world's food (FAO & IFAD, 2019). In 2017, the United Nations proclaimed the UN Decade of Family Farming (2019-2028) to achieve significant transformations in current food systems that contribute to the achievement of the 2030 Agenda, with family farming playing a leading role. These intentions align with Cuban regulations, where agriculture is considered a priority, and the role of municipalities and the University-Government partnership is valued.

For this proposal, the province of Guantánamo, the easternmost in Cuba, was chosen. Over 82% of its surface area is mountainous, and its economy is predominantly agricultural. The municipality of El Salvador is considered a priority within the province's strategy for ensuring food production. Therefore, the University of Guantánamo and the Municipal University Center of El Salvador (hereinafter referred to as the University), along with the Provincial Government of Guantánamo and the Municipal Government of El Salvador (hereinafter referred to as the Government), were selected to carry out this proposal. This research stems from the identification of a disconnect between government goals and the scientific support necessary to understand the dynamics of these rural families.

This study is based on the bibliographic analysis conducted by Batista Fonseca (2021) regarding the categories of family farming, family agricultural production units, family production units, family replacement, family life cycle, social reproduction, and family composition and size. In the case of the concept of social reproduction strategies, drawing on Batista Fonseca's (2021) systematization, the perspective of Pierre Bourdieu (2011) is adopted, who argues that thinking about social reproduction beyond any reductionism means considering strategies as the "product of practical sense," that is, an objective intentionality that is not consciously assumed.

There is conceptual diversity when referring to the term "*family farming*." Consensus has been identified on two of its main characteristics that define its family nature: the preponderance of parental labor and the allocation of core agricultural activities to family members (Soverna et al., 2008). Adopting this perspective allows for the expansion of the concept to include cases where family members are minimal. It encompasses two types of agricultural economy: peasant and capitalized family farms.

For the aforementioned Decade, "family farming (which includes all agricultural activities centered on the family) is a way of organizing agricultural, forestry, fisheries, livestock, and aquaculture production that is managed and administered by a family and depends primarily on the capital and labor of its members, both women and men. The family and the farm are interrelated, evolve together, and combine economic, environmental, social, and cultural functions" (FAO & IFAD, 2019). Specifically for this study, the equivalent and operational concept assumed, as it best reflects the reality under investigation, is that of family-run agricultural production units (Batista Fonseca, 2021).

Theoretical frameworks on family farming in Cuba have addressed family dynamics and rurality as central axes of territorial development, but they remain scarce. Among the most recent are those of Hidalgo López-Chávez (2022), who highlights the importance of analyzing the relationships between the systems of influence that shape rural life, emphasizing that strengthening the family is key to the sustainability of these environments. For their part, Rodríguez Rollero et al. (2025) document the strategic contribution of urban, suburban, and family farming to national food security, advocating for the recognition of its productive capacity in the face of current challenges.

In Cuba, this notion, associated with suburban and urban contexts, has become widespread due to its use by the Ministry of Agriculture and its Urban, Suburban, and Family Farming Movement. This tends to limit the inclusion of rural farmers in this concept, obscuring the visibility of this actor in all its internal and territorial diversity. This raises numerous questions that warrant scientific investigation. Therefore, the following questions arise:

1. How many family-run agricultural production units does it have to achieve the objectives of its municipal development strategy?
2. What is the composition of the family that accompanies the tenant in the farm work?
3. What are their chances of family replacement?
4. What are the characteristics of your family replacement?
5. How to calculate the replacement index for these families?
6. What is the prevailing family life cycle in different areas, and what actions are planned within the municipal development strategy to support its phased transition?
7. Where can this data be obtained if it's not linked to any production base? Is it taken into account when decisions are made in the municipality?
8. What is the reproductive behavior inscribed in their practices and how do the regulations and measures taken impact their social reproduction?
9. How can the university support the government and contribute to preserving family farming as an important economic actor for national security and food sovereignty?
10. What actions are proposed for the inclusion of the family farming approach in development planning and how will they be evaluated?

Therefore, the present study aims to propose a family farming approach for sustainable local development planning through the design of indicators and university support measures that facilitate the integration of the Decade of Family Farming into government strategies.

MATERIALS AND METHODS

The research was based on a triangulated methodology of a cross-sectional type and non-experimental design, structured in three stages aimed at integrating the Decade of Family Farming into local development strategies with the support of the University:

1) Literature review

This initial phase consisted of searching for and analyzing current scientific literature. The process included consulting specialized sources in rural sociology and social research methodology, using thematic specialization criteria related to family farming in Cuba and the guidelines of the United Nations Decade of Family Farming and its potential to compare theoretical postulates with initial empirical observations of the local context. A comparative analysis was conducted focusing on texts from the United Nations Decade of Family Farming. This review allowed for a comparison of theoretical frameworks with preliminary empirical findings, which facilitated the identification of the limited production of studies aimed at strengthening this economic sector, in accordance with the principles of the aforementioned Decade.

2) Application of instruments and analysis of results

In this stage, information was collected and processed using two main techniques:

- Documentary analysis was applied to statistical sources and current regulations to characterize family farming in the studied sector of the municipality of El Salvador. The procedure included defining objectives, selecting units of analysis, constructing categories, and analyzing their content using a deductive approach. These texts were compared with the theoretical frameworks studied. For the sociodemographic and productive characterization, records from the National Office of Statistics and Information and the statistical data collection model were examined, comparing them with the annual reports of the National Association of Small Farmers. A review was also conducted of the legal instruments governing food production under the new economic framework, development strategies, and their methodological documents.
- Structured interviews: The objective was to gather reliable data on family labor, kinship, and complementary activities, thus addressing the gaps in previous official records. These interviews were conducted with 1,448 landowners associated with the 30 Credit and Service

Cooperatives (CCS in Spanish) in the municipality of El Salvador, Guantánamo province (2018-2020), representing 93.7% of the municipality's CCS members during the study period. To manage this volume of information, a large-scale field operation was carried out with the support of 32 previously trained collaborators, who conducted individual structured interviews during member meetings or through direct visits to farms. This collaborative work with the boards of directors and mountain technicians allowed for the collection of primary data on variables absent from official records, such as kinship, family composition, and generational replacement potential.

Data processing was performed using multivariate analysis with SPSS Statistics version 21 to characterize family units. It was based primarily on descriptive statistics: frequencies, percentages, and cross-tabulations. This analysis enabled the creation of a new database for the municipality under study and the development of proposed indicators, such as the Family-Farm Life Cycle (CVF-F in Spanish) and the Family Replacement Index (IRF in Spanish). These indicators serve as the basis for designing university-based support measures aimed at strengthening sustainable local development planning.

The validity and relevance of the data collected between 2018 and 2020 for the current analysis in 2024 are based on the persistent information gap in official statistics, which still do not include disaggregated indicators on the sociodemographic dynamics of the family units studied. The complexity of updating this data and the limitations of its availability stem from structural difficulties in accessing rural areas, marked by poor road conditions and a lack of transportation. Given this absence of updated records that recognize the family as a production unit, this data constitutes the most comprehensive and reliable diagnostic reference point found for the proposal presented here.

3) Preparation of proposals

Design of indicators and support measures.

The final phase of the research focused on designing a comprehensive proposal aimed at institutionalizing the family farming approach in sustainable local development planning. The design was based on the information needs identified during the analysis of official regulatory, bibliographic, and statistical data.

1. Selection and design of strategic indicators: To mitigate the risk of simplistic views, novel sociodemographic indicators were developed to capture the diversity of family farming. These indicators were selected for their potential to inform factual decision-making.
2. University support measures based on the pillars of the Decade: The University's support proposal for the Government was structured around an adaptation of the seven pillars of the United Nations Decade of Family Farming, linking them to the core functions of higher education (research, postgraduate studies, and outreach). The actions were selected to strengthen strategic alliances at the municipal level. This systematization of proposals ensures that local development plans do not respond solely to urgent production needs, but are grounded in the productive and generational realities of families, contributing to the development of producer mindsets aligned with national food security and sovereignty.

RESULTS AND DISCUSSION

Documentary analysis and proposal of indicators for the family farming approach in the planning of sustainable local development

Documentary analysis of specific Cuban regulatory and statistical frameworks reveals an information gap that hinders the recognition of the family as an essential agricultural production unit for planning sustainable local development (Asamblea Nacional del Poder Popular, 2022b). This deficiency is evident in the yearbooks of the National Office of Statistics and Information (ONEI, 2014, 2024), the guidelines for food production in family farming, and the data collection models of the Ministry of Agriculture, which, although they record the number of farm owners and physical production, omit sociodemographic variables that describe the internal dynamics of family farming.

This characteristic is evident in the Provincial and Municipal Development Strategies, which prioritize food production as their primary strategic focus, aligning with the national goals for 2030 and the methodological framework for territorial development established in Resolution 29 (Ministerio de Economía y Planificación, 2021) and Decree 33 (Consejo de Ministros, 2021). In this municipality's proposed development goals, the contribution of family agricultural production units (UFPA in Spanish) and CCS is relevant and crucial; however, they are addressed through standardized approaches, without measures aimed at protecting their unity while considering their inherent diversity.

While development programs associated with the implementation of Law 148 on Food Sovereignty and Food and Nutritional Security (SSAN Law in Spanish) (Asamblea Nacional del Poder Popular, 2022a) emphasize the revitalization of rural areas to address population exodus, documentary analysis demonstrates that these programs still lack tools to measure generational sustainability. Specifically, in the strategic line of Food Production and Marketing linked to this law, a lack of instruments is observed that would allow decision-makers to monitor generational replacement in the face of the identified demographic risk.

When this scenario is compared with the international guidelines of the United Nations Decade of Family Farming which calls for factual, timely, and multidimensional data (FAO & IFAD, 2019) it becomes clear that local plans like the one in El Salvador offer indirect support to these families, based on a limited understanding of their essential characteristics, viewing them as a passive recipient of social development programs rather than as the central axis of local sustainability. This deficiency translates into the absence of strategic indicators in the official records of the CCS, especially regarding family composition and the possibility of intergenerational succession.

To mitigate these risks, it is imperative to propose a set of indicators that align government programs with the actual capacity for succession on farms. In this regard, university support emerges as the fundamental knowledge management measure for institutionalizing these tools and facilitating the integration of the Decade's pillars into local planning, thus contributing to ensuring the permanence and self-development of rural families. Therefore, the need to use alternative sources of information for data collection is evident, which underpins the following proposal of strategic indicators for characterizing family farming.

The proposed data was obtained by creating a table to collect information on landholders and their family production units in the 30 CCS of the municipality studied. The data contained in the membership records and producer files managed by these cooperatives includes: name and age of the landholder; sex of the landholder; type of tenure (ownership, usufruct, mixed); total area; types of physical production; year of land acquisition for agricultural use; and zone. Additional data was obtained from member meetings, as the production units are not required to register them: number of family members living on the farm, including the landholder; relationship of the family members living on the farm to the landholder; sex and age of each family member; and complementary activities carried out by the family members living on the farm.

With the analysis of these data, the following variables were constructed: Possible Family Replacement (PRF in English) (characteristics); Family Replacement Index for landholders associated with CCS in the municipality; Family-Farm Life Cycle (CVF-F); composition and size of the family in the domestic unit of the holder.

As a family unit of agricultural production, all family members living on the farm were analyzed, even if they resided separately. Family members who collaborated on this work were also included, even if they did not live there. The CVF-F was introduced, based primarily on: the age of the owner and their descendants (including stepchildren and adopted children, provided they live on the farm); and the length of time they have been on the farm, with the intention of including alternatives to the nuclear family.

The PRF was obtained by considering both qualitative indicators, expressed in the opinions of the interviewees, and quantitative indicators, determined by the number of children and other relatives by age living on the farm, excluding the owner's ascendants, even if they work on the farm. Spouses are considered as long as the farmer does not have children on the farm or working there. Other relatives are included as long as they are younger than the owner and live on the farm.

The possibility of family replacement: *the existence of at least one family member who will continue the productive activity as a probability of occurrence in the future*. Regarding the relative quality of the probability of replacement, the type of involvement of the potential successor in the productive activity can be distinguished: 1) Passive family members: relatives under 18 or those who have not yet joined this activity because they live or work elsewhere; 2) Active family members: members who, of working age, frequently collaborate; 3) Potentially active family members: those under 18 who collaborate in production.

It can be characterized the replacement in terms of its quantity: single replacement: only one family member meets the requirements; multiple replacement: more than one family member meets the requirements; in this indicator it is important to record their sex.

Hence, the Family Replacement Index for Landholders associated with CCS in the municipality (IRFTT-CCS-M) was calculated, and not for the family in general, understood as the *percentage of producers who potentially have family members as a replacement for the continuity of productive activity*.

The following formula is introduced (Batista Fonseca, 2021):

$$IRF_{TT-CCS-M} = \left(\frac{TPRF}{\Sigma TT} \right) \cdot 100$$

TPRF: Tenentes de tierra con posible reemplazo familiar familiar
 ΣTT : Total de tenentes de tierra en el municipio

The composition of the family is coded into eight types, namely: 1) nuclear family with children (marriage or civil union with one or more children); single-parent family (one of the spouses with their children); 2) marriage or civil union (a couple); 3) extended family (includes the above provided there are other relatives); 4) reconstituted family with own children and stepchildren (couple living with at least one of their own children and one stepchild); 5) reconstituted family with stepchildren (couple living with at least one stepchild); 6) composite family (includes the above types provided there is at least one person without family ties); the following were incorporated into the classification: 7) "single-person household" (property where only one member of the family lives) and 8) "property without relatives" to include properties where no relative lives, including the possessor.

For the analysis of the size of the family living on the farm, four categories are used: 1) "small families" (one to three members), 2) "medium families" (four to six members), 3) "large families" (seven and more members), 4) and "no family lives" were included.

The family-farm life cycle is the *life course in UFPA, a flexible process with tentative stages that take into account family composition, the age of its members, and the length of time they have owned the farm*. For this research, a classification of its stages was constructed to combine traditional stages with the types of families that exist today, with the intention of including alternatives to the nuclear family and their relationship with the farm (Table 1) (Batista Fonseca, 2021). This process is closely linked to the adoption of the diverse social reproduction strategies employed by family farmers.

Table 1. Stages of the family-farm life cycle

Stage	Definition and possible situations	Start	End
I. Start	Property that accommodates the union of two people without children (marriage or de facto union, two siblings, tenant and parents except for properties that were inherited).	When cohabitation begins on the property (tenant under 60 years of age and 10 years on the property).	When the first descendant or financially dependent minor (under 18 years old) arrives.
II. Demand	Farm that welcomes the union of two people who have offspring in their care.	When the first descendant or financially dependent minor (under 18 years old) arrives.	When at least one descendant or minor reaches the age of 18 and collaborates with the work on the farm.
III. Growth	Farm that hosts a union of two people who receive support from their offspring in/for farm work.	When all descendants or younger persons reach the age of 18 and collaborate with the work on the farm	Tenant who lives on the property or not, with offspring over 18 years of age who do not collaborate on the property.
IV. Dispersion /Delivery	Farm that houses a residential unit with elderly adults, sending members to another place; or tenure that houses the family or union of people who are left in charge, since the elderly holder does not live on the farm; elderly possessor who did not have children and/or does not have family cooperation for the work on the farm.	Tenant over 60 years of age, whether or not they live on the property, with descendants over 18 years of age who do not collaborate on the property.	Death of the fork.

Source: Batista Fonseca (2021)

The proposed family life cycle model can be extended to other family producers if we draw the corresponding analogy between the term "farm" and "garden, yard, backyard, business." A symbology incorporating the farm's location was used for the family diagrams, allowing for a more accurate representation and understanding of the family-farm relationship (Figure 1).

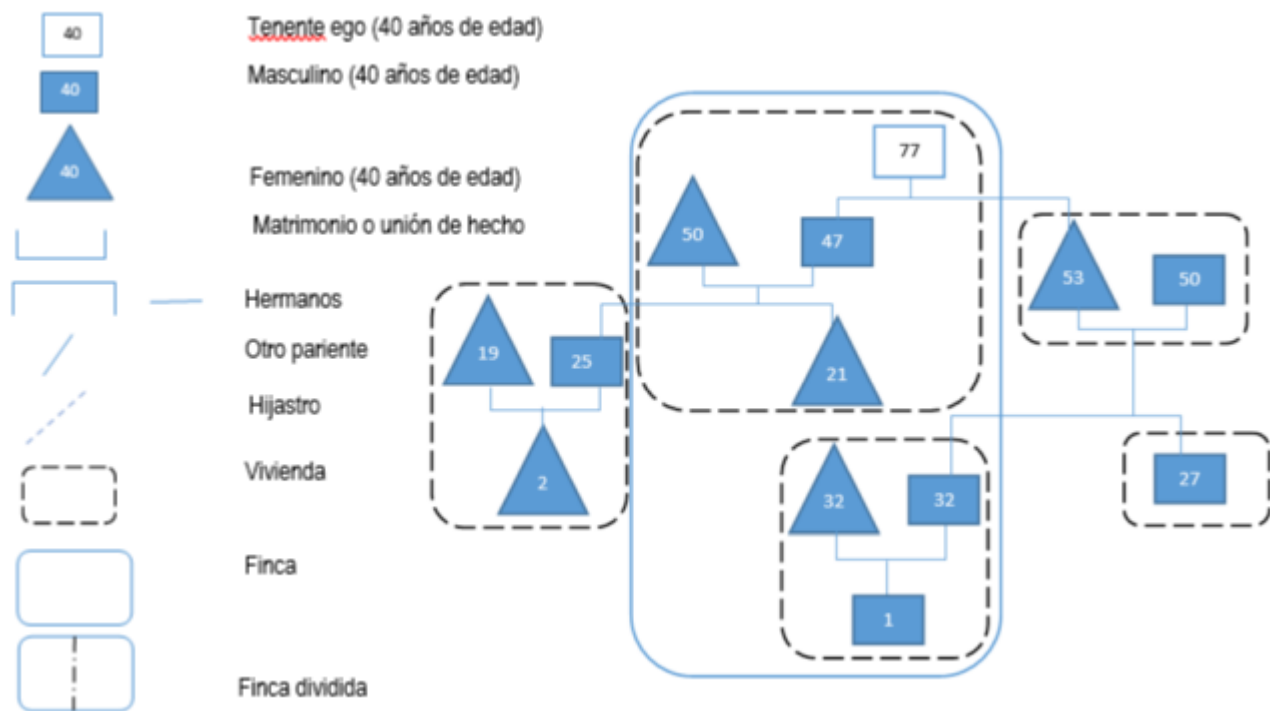


Figure 1. Symbols used for the construction of family genograms

Source: Batista Fonseca (2021)

The ongoing consideration of gender equity in each analysis, taking into account the impact of decisions made on women and girls, their position and empowerment, is understood as relevant to social reproduction.

The interpretation of the documentary results suggests that, without integrating the proposed indicators, especially the CVF-F and the IRF, government planning risks falling into undifferentiated approaches. Therefore, at this point, it is pertinent to incorporate the vision of the Decade to highlight the family as the basic link for resilience and food sovereignty in the country's context.

Statistical analysis of the key results and their importance for municipal agricultural development planning. The case of the municipality of El Salvador

In the province of Guantánamo lies El Salvador, a municipality with a distinguished history within the national peasant movement. The results obtained from structured interviews (Batista Fonseca, 2021) reveal the diverse facets and nuances of family farming.

The extended family (31.6%) was confirmed as the predominant and most efficient model for social reproduction in the studied context, especially in mountainous areas like Realengo 18, where this type of family guarantees the availability of family labor for high-demand crops such as coffee. The prevalence of extended and nuclear families (20%) compared to 14.8% of single-person households underscores that family farming in Cuba operates as a collective project where kinship ties are transformed into strategic labor links (Table 2). This configuration corresponds to the thesis of Chayanov (1974), who argues that the peasant economic unit does not seek capitalist profit, but rather a balance between the family's consumption needs and the labor effort of its members to ensure their own subsistence. However, the existence of 10.1% of farms without resident family members and a high number of single-person households in La Escondida (56) indicated processes of silent "de-peasantization," where the closure of institutions important to families has had an impact. In these cases, the productive unit survives physically, but loses its regenerative social core, which demands university support for government decision-making, social innovation, and territorial cohesion.

It is also noteworthy how small producers predominate in this municipality, not only in terms of farm size but also in terms of the number of people working on them, a trend that is confirmed in this locality. The results prove useful by enriching the diagnosis of the municipality's demographic situation, as they specify the characteristics of this economic agent in terms of size, composition, and replacement. This facilitates the implementation of actions to incorporate several relatives, train them, and motivate them.

Table 2. Typology of family composition of the UFPA-CCS by zones of El Salvador

Area	Single-person household	Nuclear with children	Single parent	Extensive	Marriage or common-law union	Reconstituted	Composite	Farm without family
Carrera larga	77	151	40	165	83	25	2	34
Bayate	37	49	9	59	41	14	1	59
Realengo 18	45	54	17	157	39	8	3	36
La Escondida	56	35	11	76	37	11	0	17
Total	14.8%	20%	5.3%	31.6%	13.8%	4.0%	0.4%	10.1%

Source: Prepared by the author using SPSS 21

The predominance of units in the Growth (40.2%) and Dispersion/Transfer (38.6%) stages reveals an aging but consolidated municipal agrarian structure in terms of land ownership. It is significant that usufructuaries represented 58.3% of the total, concentrated mainly in the Growth phase (21%), suggesting that land transfer policies have been effective in revitalizing productive units with an active workforce. Even so, the information gap widens when observing that 11.7% of usufructuaries in the Dispersion stage lack family replacement (Table 3), which places these lands in a state of legal and productive vulnerability due to the possible termination of the usufruct for lack of generational continuity. This fragility in the final phase of the cycle coincides with the findings of Brossier et al. (1998), who warn that the lack of inheritance security during the dispersal stage compromises wealth accumulation and the stability of the family-farm system. This "metamorphosis" of the family unit, where private property shows greater inheritance resilience than usufruct, demands social security and inheritance policies that recognize the specificity of family farming beyond the legal title.

Table 3. Distribution of land tenure according to the stages of the CVF-F

Type of land tenure	Start	Demand	Growth	Dispersal/Delivery	Total (%)
Owner (Yes PRF)	0.7%	3.4%	18.1%	10.6%	32.7%
Owner (Non-PRF)	0.3%	0%	0%	6.1%	6.4%
Usufructuary (Yes PRF)	2.8%	11%	21%	11.8%	46.6%
Usufructuary (Non-PRF)	2.2%	0.3%	0%	9%	11.7%
Mixed (Yes PRF)	0%	0.3%	1.1%	1%	2.4%
Mixed (Non-PRF)	0.1%	0%	0%	0.1%	0.1%
Total	6.1%	15.1%	40.2%	38.6%	100%

Source: Prepared by the author using SPSS 21

Determining the level of attention required by area is an advantage offered by this analysis: In the Turquino Plan, residents express dissatisfaction with the poor condition of roads and transportation. The transformation or closure of schools and health centers has exacerbated this situation, as many now have to travel long distances to access them. This highlights the need to take action to minimize the negative effects associated with farm abandonment. In the La Escondida and Realengo 18 areas, residents show greater dissatisfaction with most aspects. Undoubtedly, the conditions in the Carrera Larga area are the best, which explains its high number of landowners, as well as those with PFPs in the Dispersal/Delivery stage. The Bayate area deserves special attention, as the data indicates a predominance of producers in the Dispersal/Delivery stage who currently lack family replacements. The Bayate and Realengo 18 areas have the oldest replacement stock, while the Carrera Larga area has the youngest. These areas are also distinguished by the longest tenure on the farm. This aligns with the satisfaction levels across the different areas.

The availability of this data enhances the knowledge base for diverse decision-making, which can act as a check on homogenizing, spontaneous, and improvised approaches to addressing the needs, interests, and particularities of these communities. This is achieved by considering, among other things, findings on the family-farm life cycle. The Family-Farm Life Cycle mediates all the social reproduction strategies of the Family-Farm Production Units and the agricultural production processes they carry out. Therefore, if the goal is to preserve this group within the framework of

agricultural development, coordinated attention and support are an urgent task for municipal development managers, including all institutions and organizations associated with the sector.

The need to plan educational and health assistance aimed at training a quality replacement workforce has been identified, especially in areas where this workforce is under 20 years of age and over 40. It is crucial to ensure the effective implementation of the final stage of the CVF-F, related to delivery and continuity, as well as the Demand and Growth phase, which will enable the training of the necessary replacements. This includes actions for their preservation and to incentivize the successful establishment of other CVF-Fs. Updating the Municipal Development Strategies through 2030 to incorporate these findings, while promoting the creation of protected areas for this workforce with equitable and inclusive participation, complementarity, and respect for nature, represents a path forward.

On the other hand, the data confirm a marked gender asymmetry in both current land ownership and succession projections, with 81.7% of landholders being men. The logic of succession structuring tends to reproduce the patriarchal model: male landowners predominantly project their replacement onto male descendants (44.3% of the total), while female landowners also show a tendency to bequeath to men (79% of cases) (Table 4). This trend of male absorption is due, in part, to parents pressuring their daughters to study professions outside the agricultural sector, encouraging their migration to urban areas. As Deere and León (2000) point out, the persistence of a "preferential male inheritance" constitutes a structural barrier to gender equality, limiting women's access to land ownership and decision-making in rural areas. The fact that only 25.8% of potential replacements are women demonstrates a persistent cultural barrier that limits female empowerment in the direct management of UFPA, despite the fact that the new Family Code and the SSAN Law promote equity in access to resources.

Also noteworthy are the male landowners, primarily between 51 and 60 years of age, a characteristic mirrored in the gender of potential replacements, with a tendency for this pattern to continue. Among landowners without successors, the owners stand out, placing them in a situation of social vulnerability and indicating the disintegration of this group. Women also tend toward male succession; among them, there is scant evidence of female absorption or return trajectories.

Table 4. Characterization of family replacement according to sex and type of tenure

PRF Sex	Property (holder M)	Property (holder F)	Usufruct (holder M)	Usufruct (holder F)	Mixed (fork M)	Mixed (fork F)	Total
Male	58%	79%	48%	71%	78%	0%	810
Female	24%	11%	31%	17%	19%	0%	374
No replacement	18%	10%	21%	13%	3%	100%	264
Total	438	129	749	95	36	1	1448

Source: Prepared by the author using SPSS 21

Especially in municipal development strategies, these results would establish better conditions for implementing the Family Code, the SSAN Law, and the National Program for the Advancement of Women (Presidente de la República de Cuba, 2021), the measures dedicated to the agricultural sector, and would better incorporate the actions that are being carried out worldwide for the aforementioned Decade.

The territorial analysis reveals a direct correlation between the area's opportunity structure and the stability of family replacement. Carrera Larga (plains) presents the most robust replacement indicators (17.10% in Growth), favored by better road infrastructure and access to services that minimize the incentive to migrate. In contrast, the Bayate area (mountains) exhibits a critical equilibrium in the Dispersion/Delivery stage, where the proportion of families with and without replacement is identical (4.10%), reflecting the negative impact of the closure of rural schools and clinics on young people remaining in the area (Table 5). This phenomenon validates Kaztman's (1999) theory on the impact of the "opportunity structure," where physical isolation and the lack of public services act as negative determinants that force families toward permanent migration instead of generational replacement.

Table 5. Probability of replacement by stages of the CVF-F and geographical areas

CVF-F (Replacement)	Carrera Larga	Bayate	Realengo 18	La Escondida
Start (Yes / No)	1.90%/1.50%	0.50%/0.30%	0.80%/0.40%	0.30%/0.60%
Demand (Yes / No)	7.20%/0.10%	2.40%/0.10%	3.00%/0%	2.10%/0.20%
Growth (Yes)/ No)	17.10%/0%	7.10%/0%	9.90%/0%	6.10%/0%
Dispersion (Yes / No)	8.20%/3.90%	4.10%/4.10%	7.10%/3.60%	4.00%/3.50%

Source: Prepared by the author using SPSS 21

The calculation of the Family Replacement Index for landowners in the municipality, a first for this group, is an important result for municipal planning. In the municipality studied, the index reached 82%, a considerable number, although not reaching the total. This data allows for comparisons between municipalities and evaluations over time to determine its variation (increase, remain the same, or decrease) and, consequently, to assess the actions taken as an impact indicator. It increases social recognition and visibility of the work carried out by the UFPA-CCS (Family Farming and Agricultural Production Units - Community Farming and Settlements) as essential actors for local development and the creation of producer mindsets regarding an activity considered a priority for national security.

These are elements to consider even in rural communication strategies, whether as part of the corporate social responsibility efforts of organizations or by local governments. Requesting scientific studies on this topic enables better performance by identifying shortcomings. Disseminating these findings reduces the time required for future research and encourages new researchers and university students to engage with the subject.

Proposal for the University's support of the Government, measures to consider

The proposed university support program is structured around the functional adaptation of the seven pillars of the United Nations Decade of Family Farming (2019-2028), which align with the cross-cutting goals of the Sustainable Development Goals of the 2030 Agenda. These measures, systematized and contextualized in table 6, are based on the consolidation of multi-stakeholder and multi-level strategic alliances, essential for the operationalization of public policies at the local level. Priority is given to institutional synergy with the Municipal Commissions for Food Sovereignty and

Food and Nutritional Security, responsible for implementing the Food and Nutritional Security Law, as well as direct collaboration with the managers of the Local Food System. This collaborative governance approach seeks to integrate scientific knowledge with government management, ensuring that the design of local strategies recognizes family farming as the driving force for resilience and food sovereignty at the municipal level.

Table 6. Proposal for university support to incorporate the family farming approach related to this Decade in the projection of sustainable local development

Pillar of the Decade	Result and product	University support measures (strategic alliances)	Indicators	2030 Goals
1. Favorable political environment	Strengthened factual information and regulatory frameworks.	Systematization of evidence and multidimensional monitoring: Establish multidisciplinary scientific groups to characterize the heterogeneity of family farming in Cuba, promoting an inclusive theoretical and methodological framework that highlights its diverse configurations within local development strategies. Promote scientific production, project development, and the organization of scientific events on	Percentage of municipalities with operational data management systems and observatories.	100% of municipal programs adjusted.

		this topic. Create scientific repositories and indicator systems (multidimensional, inclusive, and participatory) for public policy management. Implement intelligence platforms, multivariate analysis tools, and digital mapping for the geospatial monitoring of family farming.		
2. Youth and generational sustainability	Generational succession ensured in family units.	Strategic management of family succession: Sociodemographic characterization and calculation of the Family Income Index (FII) by municipality and zone. Design of curricular and postgraduate training pathways that encourage youth leadership and retention in rural areas through technological innovation. Development and support for the	Number of local strategies with succession indicators, calculated IRF and migration rates assessed by areas with representativeness of family farming.	100% of the races and municipalities.

		implementation of proposals to ensure generational renewal in family farming.		
3. Gender equality	Leadership and empowerment of rural women.	Gender-sensitive governance and co-responsibility: Participatory action research for the design of care policies and overcoming the limitations placed on women's productive roles. Strengthening rural communication with a gender focus and strategic communication campaigns on economic and reproductive rights.	Number of local development strategies with actions for equity and violence prevention.	100% of the municipalities.
4. Family farming organizations	Strengthened organizational and governance capacities.	Strengthening social and associative capital: Technical advice on contract management, inclusive decision-making, and digitalization of grassroots organizations. Knowledge	Percentage of organizations with strengthened development programs and ICT connectivity.	100% of agricultural organizations.

		management on risk assessment, climate resilience, and identification of social vulnerabilities in rural settlements.		
5. Socioeconomic inclusion and resilience	Multidimensional well-being and economic viability.	Financial engineering and livelihood optimization: Conducting feasibility studies, disaster risk management, and analyzing territorial production chains. Advising on the revitalization of public services and essential infrastructure in rural areas based on scientific assessments.	Number of municipalities with feasibility studies and social investments implemented.	100% of the settlements identified.
6. Sustainability in the face of climate change	Resilient and sustainable food systems.	Agroecological innovation and technology transfer: Advanced technical training in diversified production practices, reduction of external inputs, agroecology, and climate mitigation. Support in the design of infrastructure for	Number of municipalities with sustainable farming practices and access to improved markets.	100% of local producers and development strategies.

		access to inclusive local markets and value-added strategies.		
7. Multidimensionality and culture	Territorial development and safeguarding of heritage.	Social innovation and territorial cohesion: Studies on social reproduction strategies to highlight good practices. Promotion of intersectoral synergies (circular bioeconomy), as well as the safeguarding and enhancement of the tangible and intangible cultural heritage of family farmers with intergenerational transfer of knowledge through the promotion of horizontal exchanges and rural communication.	Percentage of municipalities with programs that integrate cultural identity and economic synergies.	100% of the municipalities.

Source: Own elaboration

This study is an effort to help fill the gap in the analysis of peasant differentiation processes, enabling the design of public policies and development programs that are consistent with the availability of generational succession, based on an understanding of the internal dynamics of production units. It also incorporates actions to support a key sector for development through university collaboration with the government, in line with the United Nations Decade of Family Farming.

Based on the analysis conducted, it can be concluded that the implementation of strategic sociodemographic indicators is validated as a fundamental technical tool for overcoming the critical information gap and legally and statistically recognizing the family as a relevant actor in agricultural production in Cuba. These instruments allow for a shift from standardized perspectives to practical planning that highlights the heterogeneity of family units and contributes to preventing the risk of silent "de-peasantization" detected in vulnerable areas. Likewise, university support, structured around the seven pillars of the United Nations Decade of Family Farming, is confirmed as a relevant knowledge management measure for institutionalizing this approach within local development strategies. This synergy between academia and government ensures that public policies not only respond to urgent production needs but are also aligned with current regulatory frameworks, guaranteeing generational sustainability, gender equity, and the resilience of local food systems.

The proposed measures aim to incorporate the family farming approach into local development planning, leveraging the University's mandate to achieve this goal effectively. Planning processes lacking such analyses are unlikely to achieve effective management that addresses the needs of family farming communities related to their social reproduction, a crucial process for food and national security.

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Conflict of interest

The author declares no conflicts of interest.

Authors' contribution

Sucel Batista Fonseca wrote the manuscript and approves the version finally submitted.



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