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# Disaffiliation of Family Producers in Uruguay's Dairy Value Chain

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## Abstract

The crisis in the Uruguayan dairy industry raises alerts about the intensification processes and the expulsion of family dairy producers who supply industrial plants. In the period 2010-2020, a reduction of almost 800 milk producers was seen in the country. In this context, research was carried out from the qualitative paradigm that sought, from the case of the members of the Agremiación de Tamberos de Canelones (association of dairy farmers of Canelones), to understand the processes of disaffiliation of dairy farmers to the dairy industry between 2005 and 2020. A four-stage methodological strategy was proposed, which triangulated different techniques (interviews, observation, document review) to collect the perspective of disaffiliated dairy family producers. The obtained results allowed for the characterization of milk production at the national level and in the department of Canelones, as well as the identification of different trajectories of disaffiliation of union members in the study period. Various aspects of the intensification process and the increase in the complexity of management driven by the chain arose among the main factors of disaffiliation, which stress the land-family-production relationships, impacting the possibilities of permanence and reproduction in the sector for family producers.

**Keywords:** commodities, family dairy, productive intensification, permanence strategies, technical change

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## Desafiliación de productores familiares en la cadena de valor láctea de Uruguay


### Resumen

En Uruguay, la situación de crisis en la lechería genera alertas sobre los procesos de intensificación y expulsión de productores lecheros familiares remitentes a plantas industriales. En el período 2010-2020, ocurrió una reducción de casi 800 lecheros remitentes en el país. En este contexto, se realizó una investigación sobre el caso de los socios de la Agremiación de Tamberos de Canelones, para comprender los procesos de desafiliación de productores lecheros familiares remitentes a planta industrial entre 2005 y 2020. Se planteó una estrategia metodológica en cuatro etapas, que trianguló diferentes técnicas (entrevistas, observación, revisión de documentos) a los efectos de recoger la perspectiva de los productores familiares lecheros desafiliados. Los resultados obtenidos permitieron caracterizar la producción lechera a nivel nacional y del departamento de Canelones e identificar diferentes trayectorias de desafiliación de los socios de la gremial en el período de estudio. Entre los principales factores de desafiliación surgen diversos aspectos del proceso de intensificación y el aumento de la complejidad de gestión, impulsados por la cadena, que tensionan las relaciones predio-familia-producción e impactan en las posibilidades de permanencia y reproducción en el rubro para los productores de tipo familiar.


**Palabras clave:** materias primas, lechería familiar, intensificación productiva, estrategias de permanencia, cambio técnico

## Desfiliação de produtores familiares na cadeia de valor do leite do Uruguay


### Resumo

No Uruguai, a situação de crise na indústria láctea gera alertas sobre os processos de intensificação e expulsão de produtores familiares de laticínios enviando-os para plantas industriais. No período 2010-2020, houve uma redução de quase 800 produtores de leite no país. Nesse contexto, realizou-se uma investigação a partir do paradigma qualitativo que buscou, a partir do caso particular dos integrantes da Agremiación de Tamberos de Canelones (associação dos produtores de leite de Canelones), compreender os processos de desfiliação dos leiteiros familiares referentes à planta industrial entre 2005 e 2020. Propôs-se uma estratégia metodológica em quatro etapas que triangulou diferentes técnicas (entrevistas, observação, revisão documental) a fim de coletar a perspetiva de produtores familiares leiteiros desafilhados. Os resultados obtidos permitiram caracterizar a produção de leite em nível nacional e no departamento de Canelones, bem como identificar diferentes trajetórias de desfiliação dos associados no período estudado. Entre os principais fatores de desfiliação surgem vários aspetos do processo de intensificação e o aumento da complexidade da gestão impulsionada pela cadeia, que estressam as relações exploração-família-produção, impactando nas possibilidades de permanência e reprodução no setor para os produtores de tipo familiar.


**Palavras-chave:** mercadorias, laticínio familiar, intensificação produtiva, estratégias de permanência, mudança técnica

## 1. Introduction

Uruguay is the seventh-largest exporter of dairy products worldwide (Instituto Nacional de la Leche [INALE], 2022). Dairy exports accounted for 9.4% of the country's total agricultural exports in 2020 (Instituto Nacional de Estadística [INE], 2020), reaching markets in more than 60 countries (INALE, 2022). In 2019, Uruguay was the second-largest dairy exporter in the Americas and the tenth-largest in the world (Banco Mundial, 2020).

According to Hernández (2012), the process of technical change has been driving a growing intensification in the agricultural phase of the dairy value chain. This has differentially affected all the dairy farms that constituted the sector during the twentieth century, especially impacting family dairy production, a sector with greater difficulties in continuing with the path of intensification. Moreover, the growing internationalization of product marketing determines the sector's dependence on international prices, transferring price margins upstream, which are only feasible to sustain by continuing with the path of intensification and increasing production scales.

Thus, dairy farming in Uruguay has not been immune to the general process of transformations in the agrarian structure that began towards the end of the twentieth century and deepened in the first decades of the twenty-first century, which includes phenomena such as the advance of transnational capital, foreignization, concentration and anonymity in land tenure and changes in land use and land prices (Carámbula, 2015; Cardeillac Gulla & Juncal Pérez, 2017; Oyhantçabal Benelli & Sanguinetti, 2017; Piñeiro & Moraes, 2008; Tommasino et al., 2014). The number of commercial dairy farms fell by nearly 1000 units in the 2010-2019 period, a reduction that occurred differentially across farm size strata with a marked trend towards the disappearance of dairy farms within the size stratum of less than 200 ha (INE, 2020; Oficina de Estadísticas Agropecuarias [DIEA], 2018). This reduction also occurred differentially according to the destination of the dairy production on the farm, since 800 (78%) of the commercial dairy farms that stopped their activity sold milk to industrial plants (DIEA, 2018; INE, 2020). The evolution of the number of suppliers and the average daily milk volume per supplier in the 1987-2019 period (INE, 2020) show a continuous process of reduction in the number of suppliers accompanied by an increase in production volume (Figure 1).

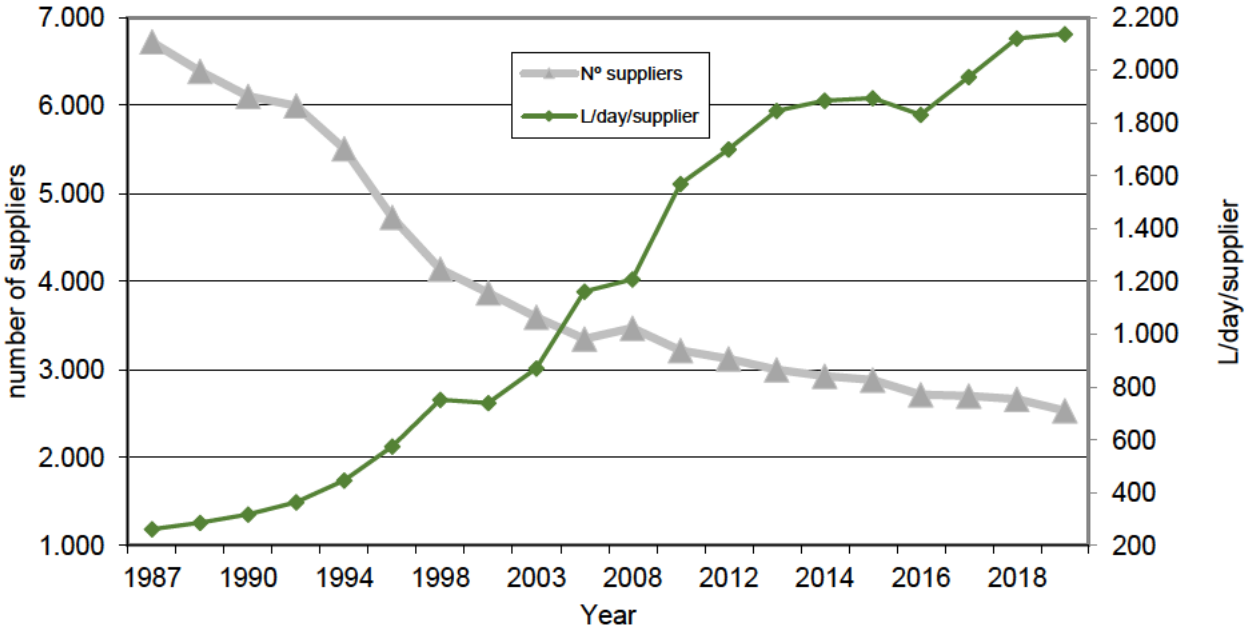


**Figure 1.** Number of suppliers and daily volume delivered (1987-2019)

*Source.* INE (2020)

In this framework, the research (Machado Torme, 2022) that gave rise to the present work had the general objective of contributing to the understanding of the factors that operate in the processes of disaffiliation of family dairy producers who supply industrial plants. The study was based on the concept of disaffiliation initially proposed by Castel (1995) and taken up again in the studies of Craviotti and Grass (2006), to focus on the processes experienced by families that "leave" or disassociate from direct production as family producers. The authors propose to use this term instead of the idea of exclusion, in the understanding that exclusion implies focusing on the rupture, while disaffiliation determines speaking of a process, a trajectory during which successive detachments or dissociations that are related to the way of work and life take place (Castel, 1995; Craviotti & Grass, 2006). For this type of family, disaffiliation not only implies leaving a job or occupation as producers, but they must reorganize a type of work that is identity-based, self-employment, a fact that can also be accompanied by another exit or rupture with agriculture. Ceasing to be a family producer implies, then, a series of

disengagements that determine the rupture of the interconnections between capital accumulation and the reproduction and well-being of the domestic unit (Craviotti & Grass, 2006).

Some background studies were considered for the design of the research that characterize strategies, types or trajectories of family producers in the Pampas region (Correa Ambrosoni, 2010; Figari et al., 2009; López-Castro, 2016; Piñeiro et al., 1998; Rosa & Arbeletche, 2016) as well as others that specifically address the dynamics of changes in family production in the dairy chain in the face of technical advice and production intensification processes (Bianco, 2014; Cardeillac, 2019; Figari et al., 1998, 2003; Narbondo Allende et al., 2010; Oreggioni Marichal, 2011; Rosa et al., 2017).

The theoretical approach of the research was focused on two major conceptualizations: global value chains and family production. Different methods and theories use the notion of chain as a category of analysis of agri-food relations, which has led to the current application of the global value chain concept to the analysis of the agri-food system, especially because it allows focusing on the insertion of the national dairy sector in international markets (Bair, 2005; Lee, 2017; Santarcángelo et al., 2017). However, it has also served as a guide for actions and market structures, both through national sectoral and business policies, and through international organizations (Fernández & Trevignani, 2015). Along these lines, its use in policies aimed at the development of small-scale and family production has been criticized because it assumes that the only objective need of these producers is to integrate into agri-food production chain market, intentionally presupposing a process of selectivity based on competitiveness in order to adjust and remain in the oligopolistic markets created by transnationalization (Bair, 2005; Martins, 2013; Mcmichael, 2013). In this sense, it is assumed that policy design has not always taken into account the specificities of family dairy production, the social subject on which this study focuses. This is particularly relevant because such policies often fail to consider that the family constitutes one of the most important factors in the internal organization of this type of farming (Chayanov, 1974). The main variable used to characterize family production was the one that prevails in national studies: the predominant presence of family labor, regardless of land tenure arrangements (Astori et al., 1982; Cardeillac, 2019; Piñeiro, 1985; Rossi, 2019).

## 2. Materials and Methods

The research was developed from a qualitative paradigm. The chosen research strategy prioritized an approach to the daily reality of the object of study, collecting field data through a process of personal interaction and in context, which sought to understand and interpret the phenomenon (Batthyány & Cabrera, 2011) based on how the world is understood, experienced and produced from the perspective of the participants (Vasilachis de Gialdino, 2006). The specific objectives were to characterize milk-supplying producers at national and departmental levels; to identify the trajectories of the members of the Agremiación de Tamberos de Canelones (ATC) within the dairy value chain of milk delivery during the period 2005-2020; and to identify and analyze factors that determine trajectories of disaffiliation of family producers from the dairy value chain of milk delivery. This article delves into the results related to the latter objective.

The case study selected was an organization of dairy producers, the Agremiación de Tamberos de Canelones (ATC), with a universe of 60 farms that ceased supplying milk to the Conaprole[I] industrial plant in the last 15 years (2005-2020). The study focused on understanding the phenomenon through the perception that the disaffiliated milk-supplying producers themselves had about the intensification processes of milk production promoted within the dairy value chain, as well as the different disaffiliation strategies developed and their impacts on the life and work trajectories of farming families. In this sense, the research sought to understand the

[I] Cooperativa Nacional de Productores de Leche.

processes of disaffiliation of family producers within the dairy value chain based on a single case. Priority was given to selecting a case that included producers from the same geographic area and supplying the same dairy industry in order to avoid differences in territorial dynamics associated with the area of insertion and to encompass producers operating under the same technical model, with similar standards and requirements imposed by the industry.

Case studies are usually used in rural studies, since they allow for the in-depth examination of a case considered of interest, through an approach that contemplates complexity and employs various techniques for the collection of empirical evidence (Sautu, 2005). This type of analysis is useful for the study of contemporary phenomena in their context, in a focused way, while generally enabling explanations of how and why events happen and the identification of their immediate causes and contextual conditions. To this end, multiple techniques are integrated, for example, interviews, observation, statistical data, and documents, among others (Sautu, 2005).

The methodological strategy was structured in four stages:

Stage 1: Analysis of census data (quantitative characterization) and a descriptive interpretation of the structural reality of the dairy sector at the national and local levels.

Stage 2 (exploratory phase): Meetings with the ATC board, exploratory interviews with qualified informants (organization members and directors, technical staff, and administrative workers), and observation activities both at the union headquarters and in the field. Observation activities allowed the construction of the types of member trajectories.

Stage 3: Survey of the organization's databases to reconstruct the members' trajectory, establish the affiliations, disaffiliations, and changes in registration status. Milk-supplying producers with a history of intensification and representative cases of disaffiliated members were identified. The trajectories followed by the cases of producers disaffiliated from the industry did not evidence total withdrawal from productive activity as a recurring factor, which is why the non-probabilistic sample of five disaffiliated producers did not include interviews with producers who had ceased to have productive activity as a means of livelihood. Three cases corresponded to former Conaprole suppliers who shifted to other dairy industries and/or dedicated to artisanal cheese production, and two corresponded to former Conaprole suppliers who left the dairy industry and moved to other productive areas.

Stage 4: It consisted of conducting and analyzing seven semi-structured interviews: five with selected disaffiliated producers and two with technicians from the sector identified as qualified informants (from the area and the sector). The interviews with the producers focused on family aspects, information on the production system, advantages and disadvantages of the sector, and the decision-making process underlying changes in their relationship with the sector and/or the industry. The interviews with the technicians focused on management aspects, relationship with the industry, markets, technical assistance, and analysis of the dairy context. Subsequently, the information was processed through an analysis matrix to identify determining factors in the trajectories of disaffiliation.

From the systematization of the interviews, it was possible to construct an interpretation matrix that integrates three categories or types of determining disaffiliation factors of ATC members: related to the relationship with the industry, dairy farm management, and family life. The set of interview results was analyzed in relation to the research objectives and triangulated with the information collected in the exploratory phase and the statistical data collected from the sector.

# 3. Results and Discussion

## 3.1 Dairy Producers at the National Level

As noted, Uruguay's dairy sector as a whole shows a tendency towards visible concentration across several dimensions. In addition, the reduction of the area occupied by dairy production at the national level has been accompanied by a process in which the areas used under ownership format have declined, while the share of land under leasing or other tenure arrangements has increased (INE, 2020). This implies higher costs and lower stability in the medium and long-term for producers.

According to census information, the first decade of the twenty-first century was marked by a decrease in the total number of dairy farms nationwide (DIEA, 2000, 2014). The main reduction was observed among farms dedicated to direct milk sales (*raw milk producers)* and artisanal processing (*cheese producers*) (DIEA, 2000, 2014). This process led the Uruguayan dairy sector to establish a highly specialized dairy production base, with 68% of dairy farms supplying bulk fluid milk to industrial processing plants (Table 1).

**Table 1.** Number of farms with dairy as the main activity according to the destination of production, based on the General Agricultural Censuses

| | Year 2000 | | Year 2011 | | Difference |
|---|---|---|---|---|---|
| **Destination of dairy production** | **No.** | **%** | **No.** | **%** | **No.** |
| Only supply processing plants | 3267 | 54.4 | 2887 | 68.4 | 380 |
| Only process cheese on the farm | 1273 | 21.2 | 836 | 19.8 | 437 |
| Only direct sales to individuals | 677 | 11.3 | 216 | 5.1 | 461 |
| Supply plant and process cheese | 111 | 1.8 | 89 | 2.1 | 22 |
| Supply plant and sell directly | 127 | 2.1 | 78 | 1.8 | 49 |
| Process cheese and sell directly | 527 | 8.8 | 87 | 2.1 | 440 |
| Supply plant, process cheese, and sell directly | 22 | 0.4 | 17 | 0.4 | 5 |
| None of the above | 0 | 0.0 | 11 | 0.3 | -11 |
| Total | 6004 | 100 | 4221 | 100 | 2074 |

*Source.* DIEA (2000, 2014)

The retraction process, in terms of the number of establishments and total dairy area, has occurred in a context of increasing volumes of milk delivered to processing plants and a stable stock of dairy cattle. However, the internal composition of the herd has shifted toward a higher proportion of animals in production relative to total dairy cattle. Similarly, the intensification of land use has also deepened, as evidenced by an increase in the areas of permanent pastures and/or annual forage crops (DIEA, 2000, 2014).

Another notable process is the reduction of unpaid labor on dairy farms. During the 2000-2011 intercensal period, the number of farms reporting family or unpaid labor as their primary source of permanent labor declined by 30%, while the number of farms with a higher percentage of paid labor increased. This change is more pronounced among milk-supplying farms, where operations relying primarily on unpaid labor fell from 70% to 44% of the total. As a result, the presence of paid labor among this type of producer was reversed in the period, which means that in 2011, the majority of suppliers (56%) relied mostly on paid labor (DIEA, 2000, 2014).

In summary, the first decades of the twenty-first century experienced important changes regarding the type of supplying producers that make up the sector. It is possible to consider that the changes in the macro indicators revealed by the official statistics are the quantitative and global expression of a series of changes in processes, dynamics, and temporalities at the farm level, which are processed differently across dairy units, determining various possibilities of persistence, continuity, and reproduction.

### 3.2 Dairy Producers in Canelones

According to census data, in 2011, the department of Canelones was home to 9.7% of the country's dairy farms. Of the 432 farms reporting dairy farming in the department, 411 identified dairy farming as their main source of income; of these, in turn, 85% supplied bulk milk to industrial plants. The average area of dairy farms was 120 ha, and the farms were concentrated in the areas of Canelones: Aguas Corrientes, Santa Lucía, and San Ramón (DIEA, 2014).

In line with processes at national level, the period 2000-2011 implied a 32% reduction in dairy farms in the department, a figure very similar to the national decline (Table 2). As for the rest of the country, the relative weight of dairy farmers in Canelones whose main source of income is dairy farming increased. In terms of specializations, and as observed nationally, the share of milk production for industrial processing increased. Among other continuities with national-level trends, an increase in the average area of farms and a reduction in the number of farms under 150 ha are observed (DIEA, 2014).

**Table 2.** Number of dairy farms in Canelones by importance of dairy activity, based on the General Agricultural Census (2000 and 2011)

| Importance of dairy activity | Year 2000 | Year 2011 | Difference |
|---|---|---|---|
| Main activity | 573 | 411 | 162 |
| Secondary activity | 40 | 20 | 20 |
| Tertiary activity | 9 | 0 | 9 |
| Others | 16 | 1 | 15 |
| Total | 638 | 432 | 206 |

*Source.* DIEA (2000, 2014)

Unlike what was observed at the national level, in the intercensal period 2000-2011 in Canelones, there was a greater decrease in the number of milk-supplying farms in relation to the number of cheese-producing and raw-milk-selling farms that constitute the dairy sector for the department. In other words, while at the national level the greatest reduction in the number of dairy farms responds to the disappearance of farms specialized in the sale of raw milk and artisanal cheese production, in the case of Canelones, the largest proportion of the decline is explained by the reduction in milk-supplying farms (DIEA, 2000, 2014).

This phenomenon is related to the fact that since the beginning of the twenty-first century, Canelones has exhibited a strong specialization in milk supply to industry, combined with a high proportion of farms under 150 ha, the stratum where the greatest intercensal reduction occurred between 2000-2011. Despite this situation, in the specific case of milk-supplying family producers, Canelones shows a strong capacity to retain this type of producer compared to national figures. Thus, while at the national level the family suppliers fell from 56.3% to 36% between 2000 and 2011, in the case of Canelones, the data show a slight reduction from 70% in the 2000 census to 64% in 2011. Similarly, there is a greater retention of the dairy area occupied by this type of producer in the case of Canelones than the national average for the period considered. From this comparison, Canelones appears in the period as a territory of conservation of the number of family-type dairy farms relative to national trends among milk suppliers (DIEA, 2000, 2014).

### 3.3 Disaffiliation Trajectories in ATC

Although ATC is legally a national organization, it has a strong emphasis on milk production in Canelones. Its main nucleus of members is mostly located within a radius of 25 km around the city of Canelones (where the headquarters are located), and, recently, another group of producers has been formed in the Tapia area.

The ATC area includes the rural areas of the municipalities of Santa Lucía, Aguas Corrientes, Los Cerrillos and Canelones. It brings together 109 dairy farms with dairy as their main activity, of which 103 supply milk to industry, with 99 as the only destination of the milk produced. Additionally, half of these farms are dedicated exclusively to dairy production, making it their sole source of income. When a secondary activity is present, 70% of cases correspond to beef cattle production. Furthermore, 94% of the farms that carry out dairy farming do not have a tertiary item.

According to the information provided by the organization's directors and technicians, ATC reached a peak of approximately 200 milk-supplying producers from the region during the last decade of the twentieth century. However, they note with concern that from 2014 to 2020, membership has considerably reduced to about 60 milk suppliers in the current register. As a result of the scenario involving a drop in the number of dairy farmers who are members of the organization in the area, the category of "collaborating members" (beef producers, dairy farmers not supplying Conaprole, among others) was recently implemented, bringing the organization's total membership to 80 additional members.

In the 15 years considered by the study (2005-2020), 149 milk-supplying producers maintained some form of affiliation with ATC. Of the 149 producers identified, 119 cases were analyzed. Within this group, it was determined that at the end of the period, 50% were still active in the union and continued supplying milk to Conaprole, 25% had abandoned productive activity due to retirement or death of their principal holders, and the remaining 25% corresponded to the category of disaffiliated from the industry for the period considered. It can be deduced from this systematization that 50% of the 119 cases identified ceased supplying milk to industry between 2005 and 2020, either due to farm closure (without succession) or due to a decision to disaffiliate from the dairy supply chain (Figure 2).

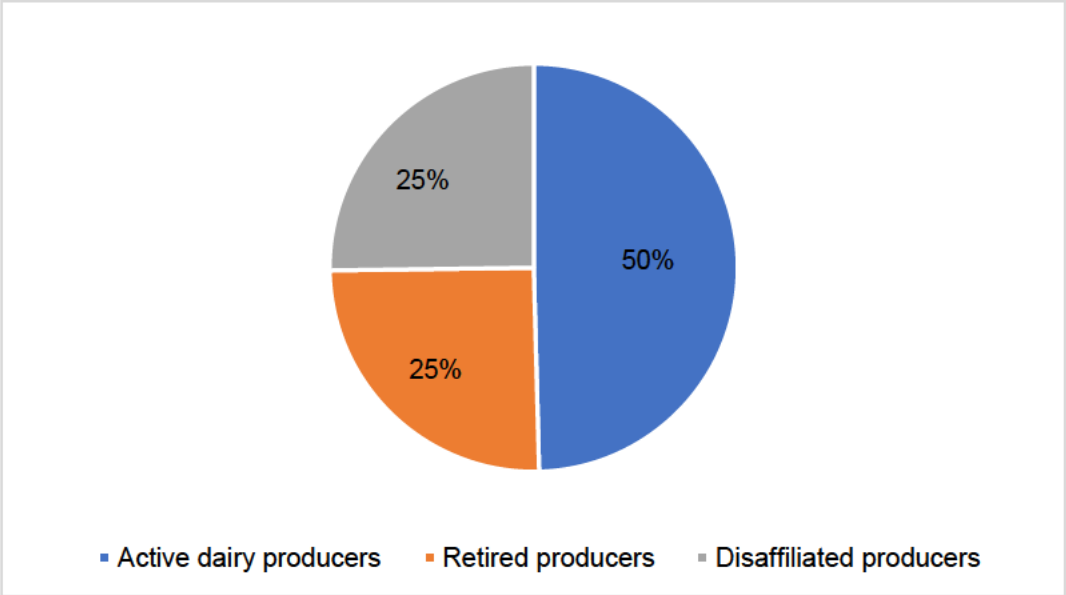


**Figure 2.** ATC members' trajectories (2005-2020)

During the study period, two distinct moments were identified where the dairy farm closures were concentrated (Figure 3). Between 2011 and 2014, 50% of the closures of the period (60 dairy farms) were accumulated; 62% of these cases were due to the retirement or death of the farm holder. Between 2017 and 2020, a further 21 closures were recorded, 71% of which were identified as disaffiliation from the milk supply chain. It is important to note that at least six more farms closed the year after the graph was produced, which confirms the trend.

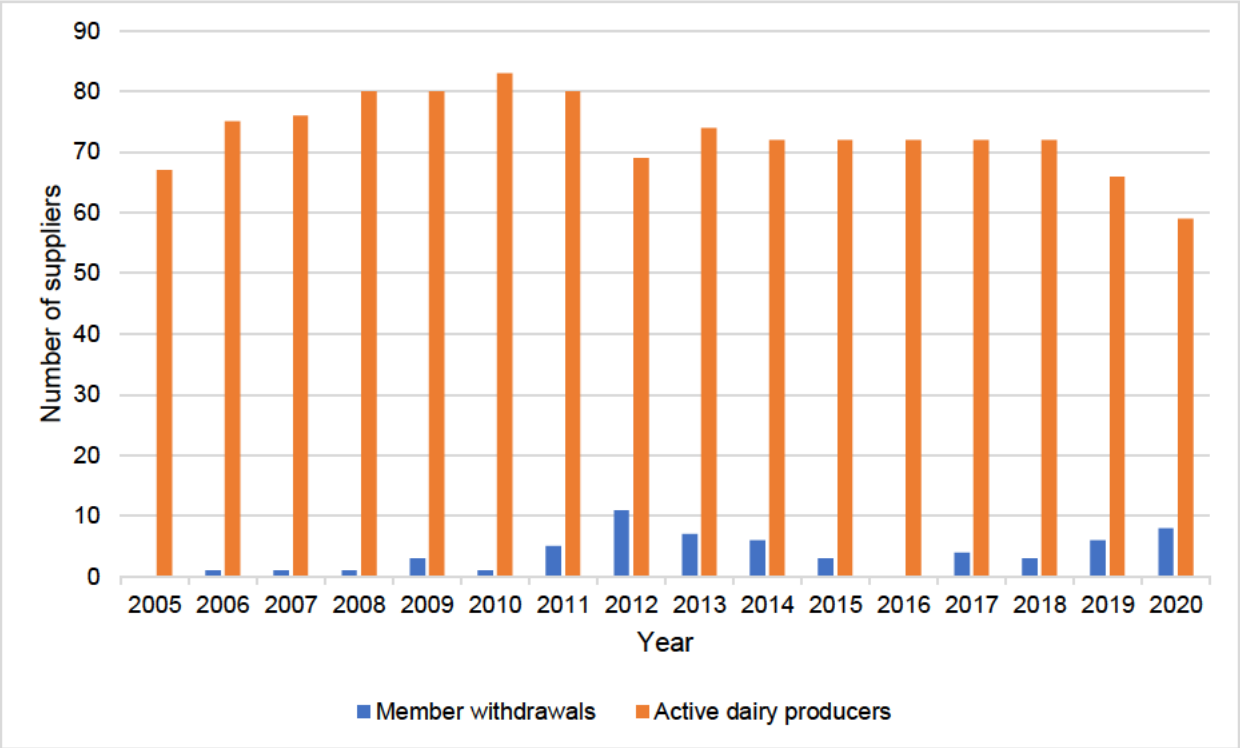


**Figure 3.** Number of active supplying producers and disaffiliations (2005-2020)

### 3.4 Dairy Value Chain Disaffiliation Factors

The research process made it possible to identify eight factors that condition the trajectories in the dairy value chain supplying Conaprole in the case of ATC members and that operate as drivers of disaffiliation. They are grouped into three dimensions: those related to the industrial sector, to dairy farm management, and to family life.

#### *3.4.1 Factors Related to the Industrial Sector*

*Industry-producer relationship*. The interviewees mention the lack of support from the industry in difficult times for families, which seems to point to the disagreement between the family logics of farm management and the business logic of the industrial sector. In the words of the interviewees: "I felt unprotected", "I felt unsupported", "I lacked support from the cooperative", "They did not find a solution for me", "The small producer does not exist, they are wishing that they all merge". There is a generalized feeling of disappointment surrounding the expectation of closer support or accompaniment that they would have required or desired from the industry. This expectation is generally intensified by the perception of being undervalued for being "small-scale". Producers also express a sense of insufficient recognition for the effort and commitment they feel they have put into meeting the requirements and demands the industry has set over time. The experience described can be interpreted as a manifestation of the characteristics of family production, where the family is one of the most important factors (Mcmichael, 2013) and marks an important difference with the business organization of the industrial phase, where the management and system operation respond not to personal or human needs, but to institutional indicators and goals.

*How far can intensification go?* In all cases, there is a perception of incompleteness on the part of the producers; they feel their effort will never be enough, manifested as frustration at not being able to comply with the requirements of the industry. Three dimensions could be visualized in which the interviewed producers expressed this situation: a) the scale to be a "viable" dairy farmer, which is constantly increasing; b) the industrial pressure to adjust to increasingly strict quality and productive management parameters, and c) the role of Prolesa and the industrial financing system, integrated into the intensification process.

The profile of the producer who joins the supply chain to Conaprole must be willing to update to the requirements of scale and the speed of changes in the production processes demanded by the cooperative. This determines a type of producer that has sufficient investment capital or, otherwise, is open to risk and debt. The presence of small land plots in the area makes it difficult to incorporate sufficient area to reach the required scale within a viable distance from dairy facilities. In general, leased land is used for grazing replacement stock and/or forage reserves. Unlike beef cattle production, where productive infrastructure is less costly and complex, dairy systems face significant constraints in accessing new land, which must be located close to the core production facilities. This characteristic anchors the system to a certain area, reducing its flexibility. In addition to the external factors, dairy farms face internal difficulties related to solving family inheritance issues, given that, for the most part, land belongs to the families of origin. Therefore, in the absence of a parent, farm areas are reduced either by sale or by the need to lease parts to other heirs, generating higher costs of establishment and moments of instability and uncertainty in land tenure.

A particularly sensitive issue raised in the interviews was related to quality and productive management requirements. Milk quality is a "controllable" factor of great influence on the final price received by the producer, to the extent that it synthesizes numerous aspects of farm management and acquires great visibility in economic terms. But the industrial pressure for product quality implies increasingly strict handling, from which it is easy to fall out of compliance, leading to costly recovery processes and significant economic impacts. So, although producers identify milk quality as a factor of prestige and pride, they experience it in the shadows of a sense of acceleration that never allows them to reach the optimum level, since "the bar is always rising" and the system never stabilizes.

As pointed out by Figari et al. (1998), those who adopt the technological package promoted by the sector to a greater degree often do so through indebtedness that compromises the economic and financial sustainability of family farms. In this regard, the medium-term financing plans offered to dairy farmers can place the production unit in a kind of mechanism that generates the feeling that "it is a snowball that never stops; you are always dealing with bills" or in "Prolesa's carousel", alluding to the circularity of the process, which determines a greater presence of use of financed inputs going forward, operating as a source of high sensitivity or extra mental load in producers, eventually becoming a barrier to exiting the sector. To the extent that "producers today are Prolesa-dependent, Conaprole-dependent, Proleco-dependent, all-dependent", the greatest effort at the farm level to increase productivity does not seem to translate into profit for producers, but rather is redistributed among all the actors in the chain.

This type of repercussion of family production's participation in value chains was criticized by Mcmichael (2013), who conceptualizes it as an instrument for generating debt and dependency through the advance of inputs, credits, and technical assistance to achieve greater productivity. Consistent with this perspective, interviews with the disaffiliated family producers reveal the economic strategy centered on avoiding loans and operating as much as possible with cash for transactions of purchase and sale of inputs and products. In these cases, disaffiliation is experienced as a mechanism for regaining control (autonomy) through cash-based economic practices: "Now I don't owe anything, I have everything up to date. I don't have any burden on my back." Therefore, although the main economic strategy of family producers aims to achieve relative autonomy in terms of work and market relations (Rossi, 2019), it should be taken into account that closing the dairy operation and exiting the dairy sector, although it retains its economic and symbolic capital, may end up transforming patterns of social reproduction and its identity support (Craviotti & Grass, 2006).

*Cost shifting and competition within the chain*. From the producers' point of view, there is a sense of "a price that is not adequate", and they focus their concern on the "cost issue". According to the information processed by Conaprole's costs project, over the last 20 years, to achieve the same income per hectare, it has been necessary to triple the investment per hectare, which makes the activity riskier and with narrower margins. Interviewees

recognize "that the cooperative always tries to give the best price", an aspect that, although it generates tensions between organizations and industry, also fosters trust and reassurance, given Conaprole's status as a producer cooperative.

It is possible to analyze this situation as proposed by Fernández and Trevignani (2015) when they criticize the false idea of "co-production" of power implied when talking about "chains", since these structures are actually functional to the deepening of asymmetries. Thus, in the interviews, the difficulty of adjusting prices and requirements to local conditions arises due to the high dependency, insertion, and competition in the international market, since "the markets demand (...) increasingly strict international standards". This situation is linked to the cooperative's need to pass the audits of large international companies (Nestlé, Unilever), without which it is not possible to sell to other companies that require them as a quality guarantee to buy Conaprole's products in the markets. Beyond the influence of these actors and their requirements, this is an escalating process that initially operated solely at the industrial stage but in recent years has increasingly imposed stricter requirements at the farm level, particularly regarding environmental care and animal welfare, which represents an additional pressure on production conditions at the farm level.

### *3.4.2 Factors Related to Dairy Management*

*Work overload*. The overload represented by management tasks in milk production has been widely documented in previous studies (Bianco, 2014; Figari et al., 2009). The interviews showed how this overload deepens in family farms, by sharing the same resources and time for family life as for management and productive activities. They also revealed the existence of different economic subjectivities regarding the assessment of long-term security, quality of life, availability of money, and the quality of work (Figari et al., 2009). In the words of one of the interviewees: "I always compare a dairy farm to a juggler: it has a lot of balls and always has to keep them in the air (...). If any of them falls, it throws the whole farm off balance (...). This means that the dairy producer has to be more of a dairy entrepreneur. And that is certainly not easy."

*Seeking balance, how long to remain?* From the interviews with disaffiliated producers, a strategy emerges of leaving dairy farming without debts that imply the loss of family patrimony. This implies finding an optimal moment for disengagement in a context of great uncertainty, generated, among other aspects, by: a) the increasing complexity of the productive system and the family's ability to keep up with growth and investment, b) medium- and long-term debt levels of the farm relative to the total productive capital, (c) market values of dairy cattle, (d) the expectations for international and/or local milk prices, and (e) the evolution of dairy profit margins.

On the other hand, producers identify the dairy farm as an economic investment that, in addition to generating an income for the family during its active stage, must produce sufficient capital to support a dignified retirement. Failing that, if they leave the sector, it should generate capital that allows the family to start another productive economic activity. This is related to the fact that dairy farming is not only difficult to enter and remain in, but also difficult to exit. As noted before, dairy farming has high entry barriers and requires a reprofiling of farm management that pushes towards the consolidation of a business-type management unit. However, for family producers who remain and are unable to adapt to the wheel of change and investment that it requires, there are also exit barriers, which have to do with the payment systems and input advances, which make it difficult to process an orderly closure of the activity.

### *3.4.3 Factors Related to Family Life*

*Tensions within the family*. The family and the family life cycle (Chayanov, 1974) in family dairy farms emerge as key elements to understand the phenomenon of disaffiliation. The interviews often referred to the internal family tensions due to the high workload, the absence of some members at key moments, caregiving difficulties,

mental and physical overload, unavailability for moments of recreation and rest, the need for vacations, among others. Another determining aspect for older producers is the need to reduce the complexity of the system to adapt it to work capacities, which decrease with age.

*A better future for my children*. The incentive of having more time for the family and other activities for their children, together with the feeling of family satisfaction after disaffiliation, more relaxed relationships, and greater peace of mind, explains the absence of a successor training process on the farm in the cases interviewed. Even when the children reside on the farm, families encourage them to engage in other income-generating activities. The growing importance of formal educational strategies (particularly tertiary studies) has been noted in other studies on family livestock farming (Gallo & Peluso, 2013; Rossi, 2019). Other studies suggest that the lack of successors may often be fostered by the parents themselves, who sometimes seek to disassociate children's work and life projects from agriculture (López-Castro, 2016).

*Maintaining quality of life*. In the interviews, quality of life was associated with the idea of breaking free from the "enslavement" that dairy farming represents, which is linked to ending the milking routine, the need for rest and greater autonomy in management, having greater flexibility in the production system to adjust to family needs, working with cash and without debt.

## 4. Conclusions

The idea of disaffiliation refers to a succession of ruptures, that is, a process where a series of detachments accumulate that, taken individually, may not raise alarms, but when seen as a whole and in context, they allow drawing up a map of the various fibers that were cracked until the thread finally broke. In the case of family production, two central threads to observe are the tensions between the forms of work and production and the way of life of the producing families. In the case of milk supply production, this relationship is strongly influenced by the close link with the industrial phase and, through its components, with international markets and their conditions, determining a "gatekeeper inside" reality in a strong relationship with the prevailing conditions of local and global dairy chains.

The concept of disaffiliation also makes it possible to connect the processes of decomposition at the general level with the processes at the level of the production unit and/or with the processes of resistance. Specifically, this research addressed cases of supplying producers who chose to disaffiliate from the chain as a form of resistance within the family mode of production. But from the idea of disaffiliation, the processes of those who chose to disengage from the family mode of production as a mechanism of permanence in the dairy chain could also be explored.

With regard to global value chains, it is important to note that they are not neutral perspectives and that it is essential to revisit the theoretical traditions from which they originate when designing research and public policies.

For the case study, over the past 15 years, the ATC has experienced a deepening process of loss of family milk-supplying producers. Family production inserted in the dairy chain is being pushed either towards a disaffiliation from the family mode of production or a disaffiliation from the milk-supply chain to an industrial plant, which reinforces the trend towards the corporatization of the supplying dairy farms. This study then raises the question of whether the milk-supply chain remains as a space for the permanence and reproduction of family production. Another question also arises regarding what happens to families who decide to disaffiliate from the family mode of production to continue in the milk remittance chain.

From the case analyzed, it is observed that global value chains promote a fragile and subordinate integration, which drives the adoption of a series of technical changes and a productive package within the production units that strongly stress the material and subjective conditions of existence of family production. The idea that sustainable intensification with competitive integration into value chains truly constitutes a development policy aimed at ensuring the persistence and reproduction of family production thus appears to be questioned.

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## Transparency of Data

Data not available: The data set that supports the results of this study is not publicly available.

## Author Contribution Statement

| | A Machado | V Rossi | M Carámbula |
|---|---|---|---|
| Conceptualization | ■ | | ■ |
| Data curation | ■ | | ■ |
| Formal analysis | ■ | ■ | ■ |
| Funding acquisition | ■ | | |
| Investigation | ■ | ■ | ■ |
| Methodology | ■ | | ■ |
| Project administration | ■ | | ■ |
| Resources | ■ | | ■ |
| Software | ■ | | |
| Supervision | | | ■ |
| Validation | ■ | | |
| Visualization | ■ | | |
| Writing – original draft | ■ | ■ | ■ |
| Writing – review and editing | ■ | ■ | ■ |

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