Ciencia y Progreso
Publicada en línea: enero, 2025, RNPS: 2477, ISSN: 2707-7098
http://cienciayprogreso.cug.co.cu.

La producción caprina en la Empresa Pecuaria Sierrita, su cadena de valor

Goat production in Empresa Pecuaria Sierrita, its value chain

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Recibido: de abril de 2024
Aceptado: 16 de noviembre de 2024

Resumen

La presente investigación se realizó en la Empresa Pecuaria Sierrita con el objetivo fundamental de analizar la cadena de valor de la producción pecuaria caprina y así diseñar estrategias y acciones que conducirán a la mejora de la misma. Se utilizó el análisis de expertos, entrevistas y encuestas, así como herramientas de calidad para la descripción de procesos. Como resultados fundamentales se mapea y diseña la cadena de valor, establece un análisis interno y externo del entorno para proponer a la alta dirección, posibles estrategias a implementar derivadas del mismo y recomendaciones para convertir debilidades en fortalezas, aprovechar las oportunidades existentes y evitar amenazas. Constituye un aporte para la entidad, los productores y la localidad; permitirá potenciar con mayor eficiencia la actividad pecuaria en cuestión, la seguridad alimentaria, el crecimiento y desarrollo socioeconómico de cada productor pecuario y del territorio.

Palabras clave: Cadena de valor; Producción caprina; Productores; Estrategias; Seguridad alimentaria.

Abstract

This research was carried out at Empresa Pecuaria Sierrita with the fundamental objective of analyzing the value chain of goat production in order to design strategies and actions that will lead to its improvement. Expert analysis, interviews and surveys were used, as well as quality tools for process description. The main results are the mapping and design of the value chain, the establishment of an

internal and external analysis of the environment to propose to senior management possible strategies to be implemented and recommendations to turn weaknesses into strengths, take advantage of existing opportunities and avoid threats. It constitutes a contribution for the entity, the producers and the locality; it will allow for a more efficient promotion of the livestock activity in question, food security, growth and socioeconomic development of each livestock producer and of the territory.

Key words: Value chain; Goat production; Producers; Strategies; Food security.

Introduction

Several authors state that the livestock sector plays a fundamental role in guaranteeing food and nutritional security, and contributes significantly to national development. Suárez et al. (2016) state that through this activity, great benefits are obtained, from its transformation until it reaches the final consumer. Related to this, Toala (2020), assures that:

The livestock industry has to face the challenge of producing food in sufficient quantities to meet the growing consumption demand of an increasing population, while still reducing the total volume of greenhouse gas emissions to protect the environment.(p. 18)

Currently, livestock activity is sustained in a changing environment, with interrelated and unstable processes, which, when combined with the economy, makes its study complex. In this sense, according to authors such as Suárez et al. (2016) and Toala (2020), the value chain approach in the agri-food sector constitutes a viable alternative to guarantee the satisfaction of internal and external customers with competitive products. They further refer that it is the coordinated set of activities that add value to a product and/or service, and by which the consumer recognizes a certain differential value. This concept has been developed in the international context as a possible response to the needs of companies and is also considered as a means of analysis to identify advantages and weaknesses.

Insufficient food production has been a sustained problem in Cuba since long ago, according to several authors, which has led to accentuate the external food dependence and increase imports for this concept. In this scenario, Ojeda and García (2018), refer that Guideline 185 states, in relation to agroindustrial production, the need for the application "of a systemic approach, which includes not only primary production, but all the links that are articulated around the agroindustrial complex". For their part, Báez and Oramas (2018), explain that "The value chain strategy takes on relevance as a strategic instrument to continue advancing in the competitive, equitable and sustainable development of the sector through alliances and synergies between the links in the chain" (p. 155).

According to Báez and Oramas (2018), taking advantage of the opportunities offered by the new trends in global agrifood markets imposes great challenges to livestock farming in Cuba. Related to this,

García and Juca (2016), consider that the study of this approach (value chain) in agriculture is a basic tool for the identification of advantages and disadvantages in each of the links that compose it and, consequently, for the achievement of higher yields.

In this context, the country is developing a national goat development program that seeks to strengthen production, improve product quality and promote marketing.

In line with the approved policies and the organization's own interests, Empresa Pecuaria Sierrita seeks to develop, in a sustainable manner, the production of processed milk, meat and skins of goat origin and also contribute to improving the quality of life of the personnel involved, the creation of skills among them and other interested parties, and have an impact on municipal self-sufficiency and local development. However, there are no studies of goat production with a value chain approach that would facilitate the design and implementation of strategies to coherently articulate all the elements involved, overcome existing challenges and achieve the goals set. This situation has been pointed out at the national level by the Ministry of Agriculture (MINAG).

Therefore, this research is carried out to identify critical points, develop strategies and proposals for improvement based on the significant elements provided by the analysis of the value chain to positively affect the quality of life of producers, business management, food security of the territory and sustainability.

Development

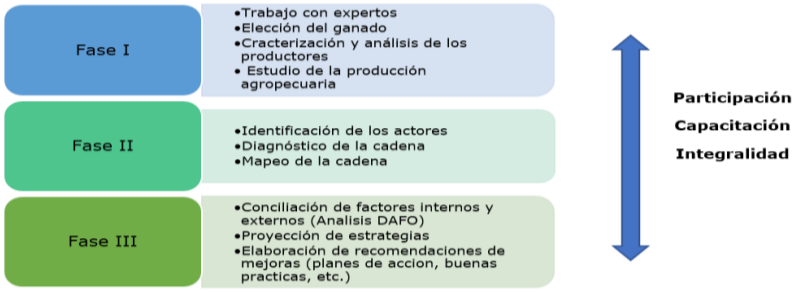
Sample and methodology

The research was developed with 60 goat producers, belonging to base units and productive forms, residents in the municipality of Cumanayagua, Cienfuegos province and associated with the Sierrita Livestock Enterprise. Using inductive-deductive, descriptive and qualitative methods through the application of instruments such as surveys, interviews, review of bibliographic information, data were collected on the productive forces and agricultural and livestock production in question. Aspects such as schooling level, management of the qualified technical force (FTC), characteristics associated with goat production (breed, number of animals, feeding system, etc.) were analyzed.

The systematic use of the intuitive judgment of a group of experts to obtain a consensus of opinion was carried out according to the criteria set out by Cortés and Iglesias (2005), and Escobar and Cuervo (2008). The number of 13 experts was defined by applying the statistical method and the formula proposed by Hernández and Baptista (2020). The competence coefficients obtained ranged from medium to high, acceptable criteria according to the aforementioned authors.

To analyze the value chain, the elements presented by Pérez et al. (2023), Toala (2020), Báez and Oramas (2018) and Suárez et al. (2016) are taken into account and adapted to their own context (see Figure 1).

Figure1. Methodology for the construction and analysis of the value chain



Source: Own elaboration

Following the recommendations of David (2019), for the generation of alternative strategies, in the decision-making process, it is necessary to align the main external and internal factors and techniques such as the SWOT matrix (weaknesses, threats, strengths and opportunities), and derivatives, such as the MAFE (Strategy Analysis and Formation Matrix) and the Evaluation of Internal (MEFI) and External (MEFE) factors are useful.

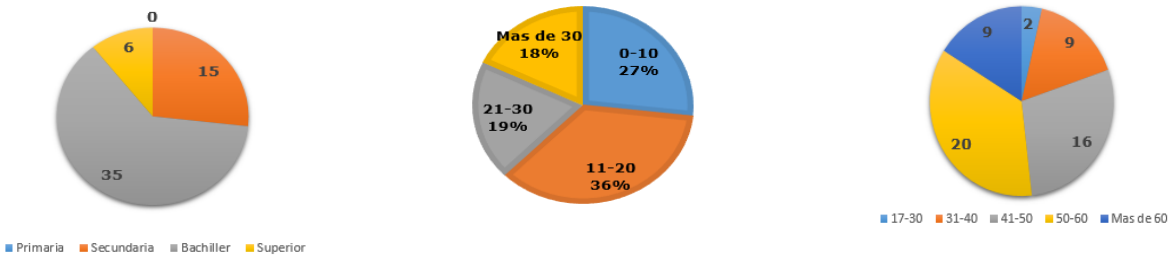
Results

Phase I

Characterization and analysis of producers

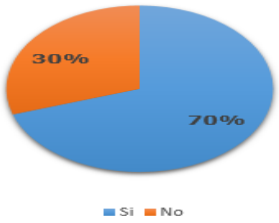
The socio-demographic characteristics of the farmers studied: schooling level, years of experience in goat production and age are shown below (Figure 2), while the training management (FTC) is shown in Figure 3:

Figure 2 Socio-demographic characteristics of the farmers studied.



Source: Own elaboration.

Figure 3: Training among producers

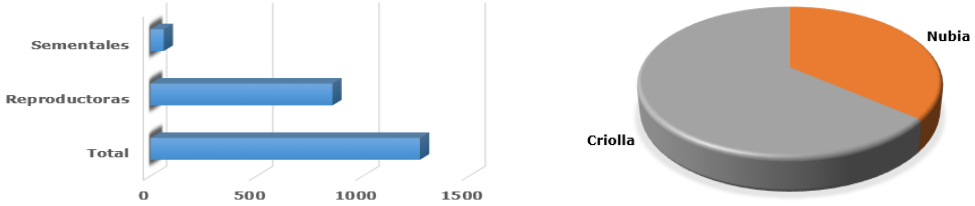


Source: Own elaboration

Goat production

The process encompasses all aspects related to the raising and management of goats. Several elements of interest associated with the number of animals, sex and breed are summarized in the following figure:

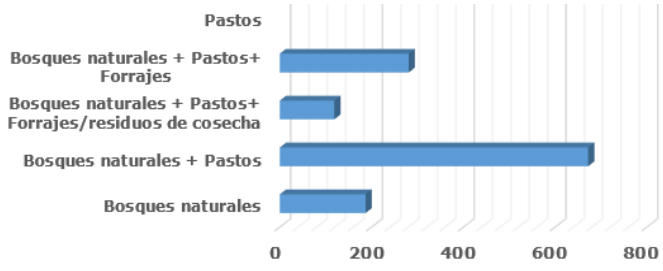
Figure 4. Goat production



Source: Own elaboration

The food base (see Figure 5) does not contain high energy values and the nutrients necessary to increase production, the composition of which is explained below:

Figure: Dietary basis of goat livestock production



Source: Own elaboration

Farmers' sources of income do not depend solely on goat production, but also on others such as poultry, swine, large livestock and agricultural work. Interviews revealed that there is a deficit in terms of input services, as well as technical assistance in various areas such as animal management, pastures and economic issues.

In most cases, the sanitary control carried out by the producers is daily. Despite the existence of the competent authority, the State Veterinary Service, due to the instability of resources, the variability of the prices applied and the experience in the activity, farmers have achieved high levels of specialization to avoid diseases and their spread among animals. Basic services such as water, electricity, telephone, health and education are within the reach of most farmers. The use of available financial services is deficient to date.

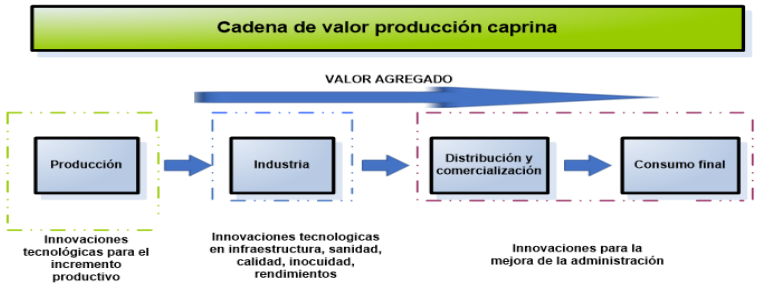
The area covered by the producers is 57 hectares, organized in farms with land or backyards, which is ideal for goat production. In 60% of the cases, the access roads are in good condition, 29% are in fair condition, and 11% are in poor condition. In discussions with producers and experts, it was determined that the production obtained from goats, such as milk, cheese and calves, can be sold easily and frequently. Although some production is marketed to state entities, the potential client is the community and people outside the community directly. The company does not have its own means of transportation, but rather the client provides it.

Phase II

Value chain and actors

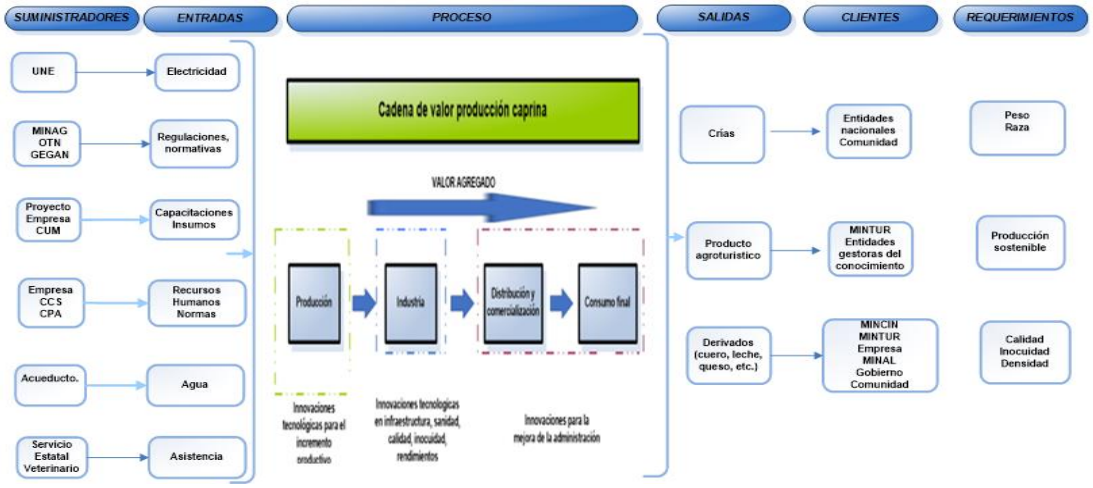
The information obtained from the aforementioned techniques allows for the design and mapping of the value chain in the context studied (Figures 6 and 7).

Figure 6 Goat production value chain



Source: Own elaboration.

Figure 7 SIPOC diagram of the goat production value chain



Source: Own elaboration

Phase III

SWOT Analysis

Reconciling the external and internal factors critical to success is the key to effectively generate possible strategies, supported by legal regulations and that respond to the transformations implemented within the current Cuban economic model. The results obtained allow the construction of the SWOT Matrix combined with the MEFE (Table 2), following the elements exposed by David (2019). The analysis also takes into account the points made by Pérez et al. (2023) and Suárez et al. (2016), for the transformation of a productive chain incorporating elements of science and innovation on agroecological bases.

Table 1 SWOT and MEFE matrix

	Fortalezas	**Debilidades**
Entorno Interno	1. Experiencia práctica y nivel cultural favorable 2. Superficie necesaria existente 3. Colaboración y cooperación con entidades gubernamentales y empresariales 4. Actividad rentable 5. Predominio de razas autóctonas y mejores adaptadas al entono cubano y al cambio climático 6. Crecimiento de la demanda 7. Mini industria instalada 8. Acceso mayoritario a los servicios básicos	1. Altos precios de los insumos 2. Falta de capacitación de productores y líderes de las formas productivas 3. Falta de acceso a financiamiento 4. Falta de un sistema de comercialización 5. Necesidad de nuevas tecnologías 6. Poco crecimiento de la masa 7. Fuerza de trabajo envejecida 8. Poco interés por parte de los líderes de las asociaciones y la entidad 9. No aplicación de la genética 10. Insuficiente base alimentaria
Entorno Externo		
Oportunidades	<u>Estrategias FO</u>	<u>Estrategias DO</u>
1. Estabilidad del mercado	1. Desarrollar estudio de mercado	1. Aumentar conocimientos en

2. La demanda es superior a la oferta 3. Acceso a créditos bancarios y bajos niveles de interés 4. Acceso a proyectos de Desarrollo Local (DL) 5. Aumento de la autonomía en la gestión empresarial 6. Disponibilidad de áreas de producción 7. Popularidad del turismo de naturaleza 8. Nuevos actores económicos	2. Establecer convenios con instituciones para capacitación de los socios campesinos y desarrollo de proyectos 3. Acceder a créditos bancarios para desarrollar la actividad 4. Desarrollar las nuevas formas de comercio (electrónica) 5. Desarrollar el agroturismo	producción y comercialización 2. Fomentar proyectos de Desarrollo Local en la entidad para obtener tecnología y otros recursos 3. Fortalecer el vínculo empresa-centros de investigación-gobierno 4. Desarrollar el cultivo de pastos con alto nivel nutritivo específico para la producción caprina 5. Desarrollar aulas de capacitación 6. Desarrollar encadenamientos productivos con actores económicos locales
Amenazas	Estrategias FA	Estrategias DA
1. Inestabilidad en los insumos (alimento, medicina, etc.) 2. Inflación de precios 3. Altas tasas de enfermedades y muertes de animales 4. Cambio climático	1. Establecer políticas beneficiosas para los campesinos 2. Fortalecer el vínculo empres-centros de investigación-gobierno 3. Insertar o elevar los montos de inversión para el fomento de la producción caprina en la entidad	1. Promover capacitaciones referentes a manejo suelo, alimentación y reproducción para optimizar resultados, elevar eficiencia y abaratar costos 2. Establecer convenios con instituciones para capacitación de los socios campesinos y desarrollar practicas sostenibles y menos costosas 3. Gestionar encadenamientos productivos con proveedores locales para abaratar costos y gastos

Source: Own elaboration

Once the SWOT matrix has been prepared, the MEFI is developed (Table 2). This analysis is aimed at identifying the company's strengths and critical factors. The weighting values (weight) range from 0.00 (irrelevant) to 1.00 (very important), while the rating 1=important weakness, 2=minor weakness, 3=minor strength and 4=important strength.

Table 2: EFI Matrix

Factores claves	Peso	Calificación	Total Ponderado
Fortalezas			
F1. Experiencia práctica y nivel cultural favorable	0,05	3	0,15
F2. Superficie necesaria existente	0,07	4	0,28
F3. Colaboración y cooperación con entidades gubernamentales y empresariales	0,04	3	0,12
F4. Actividad rentable	0,10	4	0,40
F5. Predominio de razas autóctonas y mejores adaptadas al entono cubano y al cambio climático	0,06	3	0,18
F6. Crecimiento de la demanda	0,07	4	0,28
9. F7. Mini industria instalada	0,05	3	0,15
F8. Acceso mayoritario a los servicios básicos	0,06	4	0,24
TOTAL FORTALEZAS			**1,80**

Debilidades			
D1.Altos precios de los insumos	0,10	1	0,10
D2. Falta de capacitación de productores y líderes de las formas productivas	0,02	2	0,04
D3.Falta de acceso a financiamiento	0,06	1	0,06
D4.Falta de un sistema de comercialización	0,01	2	0,02
D5. Necesidad de nuevas tecnologías	0,05	1	0,05
D6.Poco crecimiento de la masa	0,05	2	0,10
D7. Fuerza de trabajo envejecida	0,03	1	0,03
D8. Poco interés por parte de los líderes de las asociaciones y la entidad	0,03	2	0,06
D9. No aplicación de la genética	0,08	1	0,08
D10. Insuficiente base alimentaria	0,06	1	0,06
TOTAL DEBILIDADES	**1,00**		**0,60**
TOTAL MATRIZ EFI			**2,40**

Source: Own elaboration.

The external environment is analyzed in depth through the construction and evaluation of the MEFE matrix (Table 3). According to David (2019) the weighting values (weight) range from 0.00 (not important) to 1.00 (very important) while rating 1=poor strategy response, 2=average strategy response, 3=above average strategy response and 4=superior strategy response.

Table 3: EFE Matrix

Factores claves	Peso	Calificación	Total Ponderado
Oportunidades			
O1. Estabilidad del mercado	0,10	2	0,20
O2. La demanda es superior a la oferta	0,10	2	0,20
O3. Acceso a créditos bancarios y bajos niveles de interés	0,07	1	0,07
O4. Acceso a proyectos de Desarrollo Local (DL)	0,08	1	0,08
O5. Aumento de la autonomía en la gestión empresa	0,08	2	0,16
O6. Disponibilidad de áreas de producción	0,10	2	0,20
O7. Popularidad del turismo de naturaleza	0,10	1	0,10
O8. Nuevos actores económicos	0,03	1	0,03
	TOTAL OPORTUNIDADES		**1,04**
Amenazas			
A1. Inestabilidad en los insumos (alimento, medicina, etc.)	0,15	1	0,15
A2. Inflación de precios	0,09	1	0,09
A3.Altas tasas de enfermedades y muertes de animales	0,05	1	0,05
A4. Cambio climático	0,05	1	0,05
	TOTAL AMENAZAS		**0,34**
TOTAL MATRIZ EFE	**1,00**		**1,38**

Source: Own elaboration.

Based on the findings obtained, the current situation and the criteria of experts and authors, a set of recommendations are issued and an action plan is drawn up (tables 4 and 5).

Table 4 Summary of good practices appropriate to the context studied based on the criteria of experts and authors.

Elemento	Recomendación
Localización	Libre de contaminación, zonas sustentables y sostenibles
Vías internas	Drenajes adecuados, sendero exclusivo para animales, espacio necesario para la circulación del ganado
Instalaciones, equipos y utensilios	Correcta higiene y desinfección apropiadas, los reservorios o pozos sépticos deben estar cercados, las herramientas no deben de ser con materiales tóxicos preferible de fácil acceso y limpieza, vegetación libre de desechos orgánicos e inorgánicos
Corrales y área de espera de los animales	Facilidad de entrada y salida de los animales, diseño viable para la limpieza, acumulación de lodo y estiércol, proveer de agua, utilización de materiales resistentes y no tóxicos, capacidad adecuada para evitar roces entre animales y posibles peleas, las puertas de ingreso y salida deben tener el ancho apropiado
Infraestructura del área de ordeño y producción de leche	Área exclusiva para ubicar utensilios de limpieza, evitar el ingreso de moscas y roedores, garantizar limpieza y reducir la humedad, contar con agua de calidad
Alimentación animal	Los animales deben agruparse acorde a su peso, edad y sexo para un correcto control en la nutrición, el almacenamiento de los alimentos debe estar en un área fresca, se debe tener un registro de control sobre el producto, su origen y cantidades de alimentación para los animales, contar con la cantidad suficiente de raciones alimenticias, suministrar alimentos altos en energía, minerales y vitamina, agua libre de contaminación, garantizar la inocuidad
Medidas higiénicas	El personal debe tener un excelente estado de salud, utilizar la ropa adecuada, someterse a exámenes de salud periódicamente y seguir protocolos establecidos para la desinfección, áreas limpias y desinfestadas permanentemente, mantener bajo estricto control los agentes biológicos como moscas y roedores y los desechos
Bienestar laboral	Garantizar condiciones y medios de trabajo seguros, promover la capacitación, restringir el acceso a las instalaciones
Manejo ambiental	Manjar los desechos de acuerdo a las normativas vigentes, promover los encadenamientos con otras actividades para obtener beneficios (actividad forestal, suelos, agroecología)

Fuente: Elaboración propia a partir de criterio de expertos

Tabla 5. Plan de mejora de la producción caprina en la Empresa Pecuaria Sierrita

Acción de mejora	Objetivos	Responsable
Capacitar a líderes y directivos de las asociaciones (CCS, CPA) y la empresa en materia de producción caprina	Crear capacidades entre los decisores, potenciar la producción caprina e implementar políticas beneficiosas para los productores (insumos, asistencia, precios, etc.)	Director de Capital Humano Director de Producción
Capacitar a productores	Elevar la producción, garantizar la sostenibilidad en la producción pecuaria caprina a partir del empleo de las buenas prácticas y elevar las competencias	Director de Capital Humano Director de Producción
Impartir seminarios económicos	Crear capacidades entre las partes interesadas y facilitar el acceso a créditos y financiamientos	Director de Capital Humano Director de Contabilidad y finanzas
Impartir seminarios sobre legislación vigente	Explotar las facultades, autonomía y las relaciones con los nuevos actores económicos aprobadas en el marco de la transformación del modelo cubano	Director de Capital Humano Director de Contabilidad y finanzas
Realizar levantamiento del total de productores	Perfeccionar la cadena de valor, potenciar la participación, elevar la calidad de vida de productores y contribuir a la	Director de Producción

	soberanía alimentaria y desarrollo local	
Fortalecer el vínculo con entidades gestoras del conocimiento (Gobierno, MES y MINED)	Desarrollar proyectos, acceder a fuente de financiamientos y tecnologías, perfeccionar la cadena de valor y garantizar FTC y joven	Director de Capital Humano Especialista en gestión de proyectos

Source: Own elaboration based on experts' criteria.

Discussion

The review of the educational level of the workers investigated showed that the most common level was high school (63%), followed by middle or junior high school (27%) and senior high school (10%). These results contrast with those obtained by Cuellar and Reina (2023), in a study conducted in cattle ranches in the territory. This is an advantage given that these authors state that the educational level of the owners is a limiting factor for the incorporation of technologies that allow higher levels of production and efficiency to be achieved. They also point out that individuals who are better prepared educationally are more flexible when it comes to adopting new techniques.

Regarding the experience in goat production of those interviewed, there is evidence of stability in the performance of the activity, since in 73% of the cases, and the time of experience is more than 10 years. Similar results are described by Martínez, et al. (2014), in a production cooperative where they point out that more than 80% of the producers remain for more than 20 years in this activity, as well as by Valdivia, et al. (2020), in a livestock company in the province of Matanzas and according to Cuellar and Reina (2023), in research developed in dairy farms belonging to the Basic Unit of Cooperative Production (UBPC) Tabloncito and Credit and Service Cooperatives, located in the municipality of Cumanayagua. The predominant ages are over 40 years old, a fact that, taking into account the legally approved value for retirement in Cuba and the working age, denotes an aging work force. Similar elements are raised by Toala (2020), who explains that the young population is looking for better opportunities.

The study on training shows that a small percentage of respondents (30%) lack training, however, most of them consider that they are not sufficiently prepared for the activity they perform and are willing to receive more training. These elements are also stated by Toala (2020) and Cuellar and Reina (2023), in explorations carried out in the agricultural sector. The latter point out that, under the current conditions of development and changes demanded by the environment, companies, organizations and institutions understand the need for people to be increasingly trained and prepared to perform their functions efficiently and competitively. They explain that worldwide all actors (large or small) are engaged in such an important task, which is necessary to achieve business objectives. Different scholars indicate

that there is a positive relationship between capacity building to develop skills and obtaining better results in productive indicators and superior performance in the functions.

The prevalence of the Creole breed is a positive factor, as it presents greater potential for its development in the Cuban environment. According to the experts, the proportion between females and stallions is adequate. Through direct observations and exchanges with the producers, it can be said that the great majority likes and encourages the breeding of smaller animals such as the goat; this element coincides with Toala (2020). However, it is noted that there are problems in the quality of the studs and that the prices established for them are not in correspondence with the quality.

The feeding of goats is based mainly on free grazing of grassland species. Experts explain that this is generally insufficient in terms of the amount of biomass and nutrients, especially during the dry season, when the quality and availability of pastures decreases. This situation causes a delay in the animals' body development, weight loss, low fertility, mortality and a decrease in milk and meat production.

Regarding the diversification of production, Toala (2020) agrees that most farmers do not depend exclusively on livestock farming, but do other livestock work to diversify their sources of income. Elements associated with deficiencies in obtaining various services have been exposed in research carried out by Obregón and Osejo (2007). The aspects analyzed show that there are gaps in the management of existing associations (CCS, CPA and/or UEB) to promote goat production, even though this would be strategic given the current context.

The opinions of experts and workers indicate that goat production is profitable because investment and care costs are not high. Toala (2020) agrees with these criteria, explaining that this livestock production is viable, generates employment and income, improves household welfare, creates circulation in the communities and is a primary source of food. In terms of demand, goat breeding, meat and milk-derived products have a high impact on the population, health services, tourism, gastronomy and nature. The environmental impact is conditioned by the reduction of greenhouse gas emissions, water consumption and use of space. "The generation of new knowledge and greater technical capacity in small livestock producers, marks the technological impact" (Pérez et al., 2023, p. 10)

Coinciding with Perez et al. (2023):

The study of the value chain for the activity in question makes it possible to identify and visualize the set of activities associated with it that generate value, as well as opportunities for improvement. In addition, it validates the use of small livestock as a viable alternative for increasing stakeholder productivity, improving economic benefits, increasing food production for consumption by the

population and for special cases such as lactose intolerant children. It also contributes to employment generation, support to social programs and decrease of imports. (p. 9)

The SWOT analysis (Table 1), makes it possible to generate and propose to stakeholders, viable alternative strategies for the improvement of the activity in question and the future development of concrete action plans, and not to select or determine which strategies are the best. Consequently, not all proposals should be selected for implementation.

Once the internal information of the entity under study has been sorted (Table 2), it can be seen that the factor that makes it possible to face challenges and changes is the profitability of this type of production (F4). This is understandable: without being developed in optimal conditions, it does not incur high expenses and nevertheless reports a sustained income to the producers. In contrast, collaboration and cooperation with governmental and business entities is not being capitalized on as needed (F.3). Goat production is a traditional activity among the area's producers; it contributes to food sovereignty and impacts the economic life of the stakeholders, yet it has not been duly promoted through projects, local development strategies, productive linkages and other viable alternatives.

In terms of internal limitations, the greatest difficulties are high input prices (D1) and low mass growth (D6). On the other hand, the lack of a marketing system, at this time, is not a major constraint because there is ample demand and opportunities for trade. Finally, it can be seen that the total score for the internal environment is 2.40, a value below the established range of 2.50, thus considering the activity studied, according to the criteria of various authors, in a vulnerable internal position despite being endowed with greater internal elements (total strengths 1.80), than the total weaknesses obtained (total weaknesses 0.60). As a global result of this matrix, the need to urgently address the weaknesses detected is perceived, otherwise there is a risk of their transformation into threats, consequently reducing the response capacity and, therefore, limiting success and competitiveness.

After rating the external determinants of success, it was observed that the existing high demand and the availability of surface area represent the greatest opportunities with a total of 0.20, corresponding to O1, O2 and O6 (Table 3). Given the current context, as well as the impact among the population, the production derived from goat breeding has an outlet in the market, which is a real competitive advantage and having available areas allows for its promotion. The opportunity with the lowest evaluation is the linkage with new forms of management (O8), especially those of the local territory, which could lead to lower costs and expenses and an increase in income and profits from transportation, technology, purchase of raw materials, access to new markets and an increase in the quality of life of the producers.

In terms of threats, the greatest risk is instability of inputs (A1). Given the characteristics of the current context in Cuba, this is a great challenge. Lesser risks are mortality rates (A3) and climate change (A4), since the predominant breed (Creole) is highly adaptable to the conditions imposed by climate change on the island and producers have developed great specialization to face and avoid the proliferation of diseases among livestock.

Together, opportunities and threats make up a total external evaluation of 1.38, determining a risky context because it is below the established range of 2.50: there are attractive opportunities that are not currently being fully exploited. Even when threats are evaluated with a 0.34, there is a risk that their value will increase and permeate the internal and external contexts. Periodic monitoring of external factors is recommended, establishing contingency plans (formulating flexible strategies).

On the basis of the elements analyzed, practical recommendations are drawn up (Table 4) in order to contribute to the sustainability of production based on the experts' criteria and with emphasis on the local scenario studied. In order to make the implementation of the strategies defined from the SWOT analysis feasible in the future by the decision makers, the improvement actions contained in Table 5 are proposed, which are transversal to each one of them and contribute to exploit the opportunities and strengths currently existing to minimize weaknesses and threats.

Conclusions

The study of the value chain for goat development made it possible to visualize and analyze elements that have an impact on the quality of life of producers, the community, sustainability, business management and local development. A set of vital strategies were generated to immediately address the weaknesses detected in the study and take advantage of the opportunities offered by the environment to avoid threats, increase responsiveness, success and competitiveness. The recommended good practices, adapted to the current context of the producers, as well as the proposed improvement action plan, make it possible to implement future strategies to strengthen goat production.

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