

## Training needs diagnosis in agro-livestock cooperatives linked to development projects

**Diagnóstico de necesidades de capacitación en cooperativas agropecuarias vinculadas a proyectos de desarrollo**

**Diagnóstico das necessidades de formação em cooperativas agrícolas ligadas a projetos de desenvolvimento**

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## ABSTRACT

An accurate diagnosis of training needs conditions pertinent actions for individual and collective development, particularly for agro-livestock cooperatives linked to development projects, is imperative. The methodological deficiencies revealed led to formulate as objective of this work: To show a methodological guide for the diagnosis of training needs in agricultural cooperatives linked to development projects and the results of its implementation in the Basic Unit of Cooperative Production "La Unión". The research was based on the study methodology of the Marxist-Leninist philosophy. As materials and methods, the following were used: surveys, interviews, documentary review and observation. For data processing, SPSS and Microsoft Excel were used. The following are the main results: methodological guide for the diagnosis of training needs in agricultural cooperatives associated with development projects, identification of training gaps in "La Unión" based on its strategic projection and the livestock cooperative development project in the central-eastern region Prodegan, proposal of training topics by area. It was concluded that: there are methodological deficiencies to develop training needs assessments in agro-livestock cooperatives that include training demands of their development projects; the proposed guide showed methodological value due to the logical consistency, flexibility and structuring of its phases, making possible the articulation between demands of the strategic projection, individual interests of the cooperative members and training requirements of Prodegan in "La Unión"; it also made

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it possible to discover training gaps by area and provided information to adjust the training plan.

**Keywords:** training in agro-livestock cooperatives; diagnosis of training needs in agro-livestock cooperatives linked to development projects; training needs in agro-livestock cooperatives

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## RESUMEN

El acertado diagnóstico de necesidades de capacitación condiciona acciones pertinentes para el desarrollo individual y colectivo, particularmente para cooperativas agropecuarias vinculadas a proyectos de desarrollo, resulta un imperativo. Las carencias metodológicas develadas condujeron a formular como objetivo de este trabajo: Mostrar una guía metodológica para el diagnóstico de necesidades de capacitación en cooperativas agropecuarias vinculadas a proyectos de desarrollo y los resultados de su implementación en la Unidad Básica de Producción Cooperativa "La Unión". La investigación se basó en la metodología de estudio de la filosofía marxista-leninista. Como materiales y métodos, se emplearon: encuestas, entrevistas, revisión documental y observación. Para el procesamiento de datos, se utilizaron SPSS y Microsoft Excel. Se destacan como resultados: guía metodológica para el diagnóstico de necesidades de capacitación en cooperativas agropecuarias asociadas a proyectos de desarrollo, identificación de brechas de capacitación en "La Unión" a partir de su proyección estratégica y el proyecto de desarrollo cooperativo ganadero en la región centro-oriental Prodegan, propuesta de temas de capacitación por área. Se concluyó que: existen carencias metodológicas para desarrollar diagnósticos de necesidades de capacitación en cooperativas agropecuarias que incluyera demandas de capacitación de sus proyectos de desarrollo; la guía propuesta demostró valor metodológico por la consistencia lógica, flexibilidad y estructuración de sus fases, posibilitando la articulación entre demandas de la proyección estratégica, intereses individuales de los cooperativistas y requerimientos de capacitación del Prodegan en "La Unión", también posibilitó descubrir brechas de capacitación por área y proporcionó información para ajustar el plan de capacitación.

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**Palabras clave:** capacitación en cooperativas agropecuarias; diagnóstico de necesidades de capacitación en cooperativas agropecuarias vinculadas a proyectos de desarrollo; necesidades de capacitación en cooperativas agropecuarias

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## RESUMO

O diagnóstico preciso das necessidades de formação condiciona as ações relevantes para o desenvolvimento individual e coletivo, particularmente para as cooperativas agrícolas ligadas a projetos de desenvolvimento, é um imperativo. As deficiências metodológicas reveladas levaram a formular como objetivo deste trabalho: Mostrar uma guia metodológica para o diagnóstico das necessidades de formação em cooperativas agrícolas ligadas a projetos de desenvolvimento e os resultados da sua implementação na Unidade Básica de Produção Cooperativa "La Unión". A investigação foi baseada na metodologia de estudo da filosofia marxista-leninista. Como materiais e métodos, foram utilizados os seguintes: inquéritos, entrevistas, revisão documental e observação. Para o processamento de dados, foram utilizados SPSS e Microsoft Excel. Destacam-se os seguintes resultados: guia metodológico para o diagnóstico das necessidades de formação em cooperativas agrícolas associadas a projetos de desenvolvimento, identificação de lacunas de formação em "La Unión" com base na sua projeção estratégica e no projeto de desenvolvimento da pecuária cooperativa na região centro-oriental Prodegan, proposta de temas de formação por área. Concluiu-se que: existem deficiências metodológicas para desenvolver avaliações das necessidades de formação nas cooperativas agrícolas que incluem exigências de formação dos seus projetos de desenvolvimento; o guia proposto mostrou valor metodológico para a coerência lógica, flexibilidade e estruturação das suas fases, permitindo a articulação entre as exigências da projeção estratégica, os interesses individuais dos membros da cooperativa e as exigências de formação de Prodegan em "La Unión", também permitiu descobrir lacunas de formação por área e forneceu informações para ajustar o plano de formação.

**Palavras-chave:** formação em cooperativas agrícolas; diagnóstico das necessidades de formação em cooperativas agrícolas ligadas a projetos de desenvolvimento; necessidades de formação em cooperativas agrícolas

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## INTRODUCTION

The 2030 Agenda for Sustainable Development (Cepal, 2018, p. 22), a roadmap promoted by Cepal as an opportunity for the sustainable development of Latin American and Caribbean countries, in its goal 2.a recognizes the need for international cooperation for investments in rural infrastructure, research and agricultural extension services, technological development and plant and livestock gene banks, in order to improve agro-livestock production capacity in developing countries.

For the Cuban State, food security is a strategic socioeconomic priority and, in this direction, steps have been taken ranging from its conception in the New Cuban Economic Model and the Guidelines of the Economic Policy of the Party and the Revolution (LPES in Spanish), approved at the VII Congress of the Communist Party of Cuba, to the recently established Plan for Food Sovereignty and Nutritional Education of Cuba, highlighting the role of the agro-livestock sector in such purposes. Within these priorities, support for livestock production cooperatives not only coincides with the Government's strategy (through the LPES), but is justified by the fact that the cooperative sector is the most important in terms of its participation in national food production, in that it stands as a competitive and efficient alternative, which offers new answers to the imbalances in the value chain of the agri-food sector and which, in turn, promotes employment and local food chains, food security, participation and responsibility of the whole society (Acosta Morales, 2020).

Despite the many measures taken by the country's leadership to boost domestic food production, the response of this sector is still insufficient to meet this demand. Given this scenario, Cuba, taking advantage of the opportunity of being a founding member of the International Fund for Agricultural Development (IFAD) and the important contribution of this organization in the process of modernizing the Cuban agro-livestock sector by increasing physical, human, social and environmental assets, signed in 2016 the cooperative livestock development project in the central-eastern region (known by its acronym as Prodegan), the third joint project between the Ministry of Agriculture (Minag) and IFAD.

Funded by IFAD and Minag and co-financed by the French Development Agency, Prodegan aims to implement a development scheme for milk and meat production that combines territorial development with the possibility of achieving a sustainable impact on technological development, the provision of support services and the beginning of the process of transforming cooperatives into modern production and service provision entities (IFAD, 2016).

The improvement in the quality of life, gender equality and the path to decrease inequities have in the cooperative movement an indispensable element in the creation of a new culture based on cooperation and social participation (Donestévez, 2017), are aspects cited by Prodegan, not only in the declared target groups, but also in the declared training topics.

The project (IFAD, 2016) estimates a benefit, not only for the associates, but also to 11,400 families of producers organized and employed in approximately 105 cooperatives (Credit and Service Cooperatives -CCS in Spanish-, Agricultural Production Cooperatives -CPA in Spanish- and Basic Units of Cooperative Production -UBPC in Spanish-) livestock or agricultural livestock in the municipalities of Guáimaro, Sibanicú, Jimaguayú and Camagüey in the province of Camagüey, as well as to the technical personnel of the Service Providing Entities that provide support services to the livestock sector, specifically to the sectors related to milk and beef production. On the other hand, it proposes the integral training to these target groups among its main results, which presupposes the relevant role it confers to training in the achievement of the proposed objectives.

Training is an essential element in the development and competitiveness of organizations (Cuesta Santos, 2010); it has a determining influence on the functioning of organizations, which need human resources capable of adapting quickly to modern technologies and with the professional skills necessary to face complex problems (Labrador Machín et al., 2019) and is identified as an instrument that teaches, systematically develops and places any person in circumstances of competence (López Boudet et al., 2017). In addition, it contributes to the requalification of personnel to adapt them to the changes that occur in the environment, since it allows them to adjust

their personal qualities to a given activity, in addition to improving and updating the capacities, skills, attitudes and aptitudes suitable for their performance.

For Cuban agro-livestock cooperatives in particular, training is considered a key activity, given the need for them to have personnel prepared to lead the entity towards sustainable development, with full mastery of the principles and values of cooperativism; to know the legal norms that protect cooperativism, as well as to know and exercise their rights as members of the cooperative (Elizondo Lopetegui, 2013). This provides the member and the actors linked to cooperativism with tools to face the cooperative management process and contribute to a better functioning of the cooperatives and, through training actions, creates in the member skills that contribute to a better performance in the cooperative (García Pedraza et al., 2018).

De Armas and Tamayo (2019) advocate the existence in organizations of an interactive training system that responds to the needs of each individual. The fact that training is adjusted to a personalized demand reaffirms the assumption that its effectiveness will be conditioned, to a large extent, by the precision with which these are identified and their coherence with the competencies for the position, as suggested by Palmero Peña et al. (2012).

From what is expressed by authors such as: Coronado, Arroyo, Vázquez and Hernández (2017); Díaz de Casanova, Hernández and Pérez (2018); García López (2011); Leyva, Molina and Real (2016) and Elizondo Lopetegui (2013), it is inferred, in the first instance, that the training needs diagnosis (DNC in Spanish) is the way to identify the training gaps of the individuals of an organization, meanwhile it becomes a necessary premise to design effective training plans.

The DNC constitutes a process which purpose is to research and identify which are the competencies and capacities that need to be strengthened and/or developed in a worker or group, based on the lacks or deficiencies that he/she possesses in terms of knowledge, skills, attitudes and habits to perform effectively in his/her job position (Castillo Contreras, 2012). For its successful implementation, it is required to take into account the profiles or competencies of each job position, as suggested by Díaz de Casanova et al. (2018) and Prieto Olivera and Pérez Marimón (2011). The participation of both the

immediate bosses and the staff involved with the position (Prieto Olivera & Pérez Marimón, 2011) and the consideration of plans and strategies, investments, evolution of jobs, problems, needs of the management level and new projects (Elizondo Lopetegui, 2013) are also aspects to be taken into account to perform a DNC.

Undoubtedly, the new challenges and responsibilities faced by livestock cooperative members and the need to implement a modern livestock activity require that farmers be trained to develop management models that are technologically superior to the current ones and create conditions to exploit their full potential; however, this implies identifying what training they require to respond to these challenges. The purposes of Prodegan and its training requirements also make it necessary to determine these needs as a prelude to the Training Plan (PC in Spanish), included in the Cooperative Development Plan (PDC in Spanish).

Based on Prodegan's requirements regarding the PCs, the study began by verifying the existence and content of the PCs in the PDCs of the cooperatives under study. This made it possible to corroborate insufficiencies regarding the non-inclusion of the project's requirements in the training actions contemplated in the plan. Also, the participation of the authors of this work in activities promoted by Prodegan made it possible to confirm the dissatisfaction of the managers of these cooperatives in relation to the training actions they received and the way in which these were planned in their respective cooperatives.

As part of the research, it was also necessary to study methodological proposals that would contribute to the conduct of a DNC in the context of Cuban agro-livestock cooperatives with the particularities imposed on them by a development project. In general, the findings revealed multiple proposals on how to carry out a DNC, however, it was not found that these proposals responded to organizations with the particularities of agricultural cooperatives in a development project environment, although a closer approach to the expectations of this study was found in the Methodological guide for training, according to demand (Elizondo Lopetegui, 2013); it was not sufficiently explained how to articulate training needs, according to the requirements of a development project, with individual and organizational needs, according to

development strategies, which was identified as a problem to be solved in order to carry out the DNC in the cooperatives linked to Prodegan.

Based on the above elements and the results obtained during the research that gave rise to this work, the objective of this paper is formulated as follows: To show a methodological guide for the diagnosis of training needs in agricultural cooperatives linked to development projects and the results of its implementation in the Basic Unit of Cooperative Production "La Unión".

## **MATERIALS AND METHODS**

The research was developed based on the methodology of Marxist-Leninist philosophy. Among the materials and methods used were: surveys, interviews, document review and observation. SPSS and Microsoft Excel were used for data processing.

The documentary review was aimed at synthesizing the main methodological theoretical underpinnings related to training, DNCs and the methodological proposals reported in the scientific literature. This made it possible to discover the main limitations for developing a DNC consistent with the requirements of a development project in agro-livestock cooperatives, as well as to determine the essential elements to be considered for the design of the guide. The Prodegan Design Conclusion Report (IFAD, 2016) was also analyzed, with the purpose of specifying performance needs demanded by the project, as well as the main training requirements. In addition, the PCs described in the PDCs of the 31 advanced cooperatives selected by the management of the Prodegan Provincial Technical Project Office (OTPP in Spanish) were reviewed in order to compare what was recorded in them with the project's training requirements.

The interviews were conducted with the board of directors of the cooperative and some of the heads of the micro-herds. The surveys, on the other hand, were applied to 33 active cooperative members, out of a population of 40, which represented 82.5%; of these, 17 belonged to the 8 micro-herds (9 cowboys and 8 heads of micro-herds); 5 to the weaning unit and the heifer center; 4 to the cooling center and 7 to the administrative office. Both techniques were applied with the objective of identifying the training needs of the cooperative members, hired workers and their board of directors; evaluating the

motivational state and the relationships among them in their workplace; identifying the main problems faced by the cooperative, related to training deficiencies and evaluating the training process within the cooperative. In addition, field work was carried out to exchange information with members of the board of directors, heads of micro-herds and some cowboys in order to obtain their opinions about the training received and the training required.

For statistical processing of the data, SPSS software and Microsoft Excel were used to generate graphs. This made it possible to perform a frequency analysis (Table 1) and to obtain the percentage of representativeness of the items analyzed.

**Table 1** - Frequency analysis of training needs identified by the cooperative members of the UBPC "La Unión"

Training topics	Micro cowshed		Administration office		Heifer and weaning center		Cooling	
	F	%	F	%	F	%	F	%
Gender	0	0.0%	5	20.0%	1	3.4%	1	12.5%
Access to the purchase of inputs, services and equipment.	0	0.0%	0	0.0 %	0	0.0%	3	37.5%
Animal Health	15	21.1%	2	8.0%	4	13.8%		0.0%
Dough Feeding	13	18.3%	2	8.0%	4	13.8%		0.0%
Enterprise Management	0	0.0%	2	8.0%		0.0%		0.0%
Agro-livestock Technology	10	14.1%	5	20.0%	5	17.2%	4	50.0%
Reproduction and genetics		0.0%	0	0.0%	5	17.2%	0	0.0%

Milking routine and hygiene	10	14.1%	0	0.0%	0	0.0%	0	0.0%
Agrotechnics	0	0.0%	2	8.0%	0	0.0%	0	0.0%
Dough handling	11	15.5%	1	4.0%	0	0.0%	0	0.0%
Dough biosecurity	12	16.9%	1	4.0%	5	17.2%	0	0.0%
Good environmental practices	0	0.0%	5	20.0%	5	17.2%	0	0.0%
	<b>71</b>	<b>100%</b>	<b>25</b>	<b>100%</b>	<b>29</b>	<b>100%</b>	<b>8</b>	<b>100%</b>

Source: Processing of the surveys through SPSS software

Training needs were determined for each area or department, considering that the demands would vary according to the type of activity that characterized the area. The work climate and satisfaction levels were also analyzed under this same criterion.

Among the 31 advanced cooperatives of Prodegan, the UBPC "La Unión" was the cooperative selected by the OTPP to apply the methodological guide for the DNC, resulting from this research.

## RESULTS AND DISCUSSION

### About the study in Prodegan's 31 advanced cooperatives

The comparative analysis between the training requirements stated in the Prodegan report (IFAD, 2016) and the training actions contemplated in the PCs of the 31 advanced cooperatives, as well as the opinions expressed during the fieldwork with the boards of directors of these units, made it possible to discover that:

- They usually participated in training activities programmed by external organizations, which dealt with general topics that did not respond to their individual training needs

- The planning of training in the cooperatives was not based on individual training needs and, consequently, actions were not planned in correspondence with those needs
- The 31 PCs showed a significant similarity and were not adapted to the particular demands of each cooperative to respond to Prodegan's requirements
- There was no representation of the project's training requirements in the actions recorded in the PCs

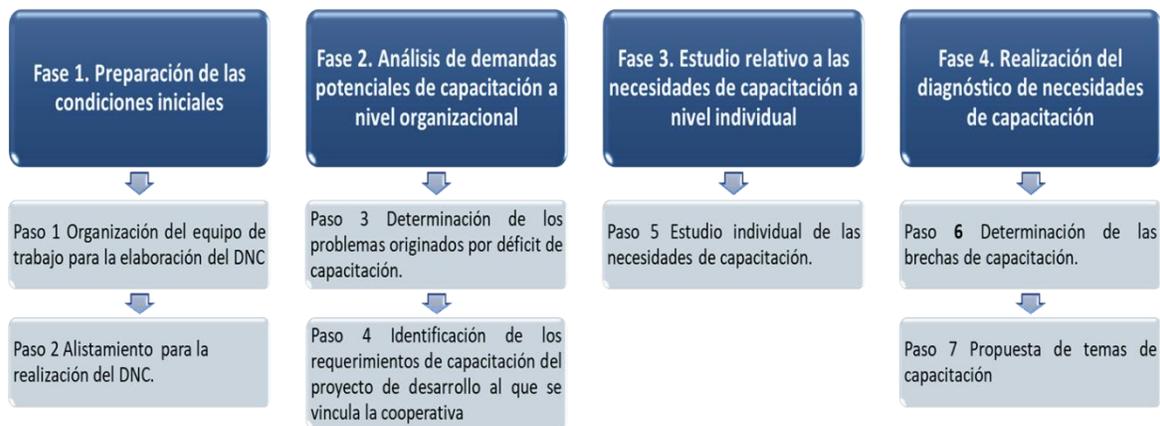
### **Design of the methodological guide for DNC in agro-livestock cooperatives linked to development projects**

For the design of the methodological guide, the levels of analysis provided by García (2011) were taken into account. Thus, the "organization" and "people" levels were assumed, while the "tasks and processes" level was not considered because the particularities of the cooperative sector did not guarantee the conditions for its study. Thus, the guide conceived a phase 2, focused on the cooperative as an organization, and a phase 3 that would study the people (cooperative members, hired workers, land users associated with the cooperative and the board of directors).

Phase 2 was aimed at identifying the problems faced by the organization and analyzing their possible relationship with the lack of training. For these purposes, a review of the administrative documentation was conceived, including: the organization's vision and objectives; expansion plans (as specified in the PDCs), as well as the development project from which the cooperative benefited in order to specify the new or future performance needs and the main training requirements established by the project.

Phase 3 provided for the review of the performance evaluation of all the cooperative's members, in order to have an overall assessment of their individual work and to identify which of the negative results could be associated with a lack of training. It also foresaw the application of interviews and surveys; the interviews for the members of the board of directors, while the surveys for the cooperative members and contracted workers.

In general, the methodological guide was structured methodologically with four phases, each with its own objective and steps (Fig. 1).



**Fig. 1** - Structure of the methodological guide for DNC in agro-livestock cooperatives linked to development projects

Source: Own elaboration

The steps also state their objective and methodological orientations.

The phases and steps of the guide were established as follows:

### **Phase 1. Preparation of initial conditions**

**Objective:** Ensure the conditions for the performance of the work team.

**Step 1.** Organization of the work team for the elaboration of the DNC.

**Objective:** To constitute the work team for the realization of the DNC.

### **Methodological orientations:**

- The personnel to be selected can be internal, external or mixed, the latter is suggested. They must have ample knowledge of the cooperative's work procedure and its areas. They should be related to the diagnostic process being carried out and have the power to mobilize the cooperative members to achieve greater participation and support in carrying out the DNC. It is recommended

that the human resources manager, a statistics specialist and the president of the cooperative participate.

- Designate the individual activities and communicate them to each team member.

## **Step 2.** Preparation for the DNC

**Objective:** Create conditions of personnel preparation and availability of resources for the development of the DNC.

### **Methodological orientations:**

- Ensure that all team members are prepared. To this end, the purpose, objectives and benefits of the DNC should be stated, and each of the phases and steps to be followed should be explained in detail.
- Define the instruments to be used for the DNC. It is recommended to design an interview directed to the members of the board of directors and other managers, in order to identify their training needs, performance of cooperative members and hired workers, main problems faced by the cooperative, and evaluation of the training process in the cooperative. A survey is suggested for the remaining members of the cooperative, in order to determine their main training demands, the state of their working relationships and motivations. The aspects contemplated in the techniques should consider the characteristics of the cooperative, its PDC and the development project to which it is linked. It should also define how the data will be recorded and processed, including the statistical software to be used.
- Explain to the team each of the techniques and instruments selected, their objective, sources and form of data collection and the information expected to be obtained, as well as how they will be processed.
- Provide the techniques and other resources for data collection and the instruments for processing the techniques.

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## **Phase 2. Analysis of potential training demands at the organizational level**

**Objective:** Identify possible training demands according to the cooperative's projections and problems.

**Step 3.** Identification of problems caused by training deficit.

**Objective:** Determine the problems in the cooperative that reveal potential training needs.

### **Methodological orientations:**

- Review the cooperative's vision, mission and specific objectives in the cooperative's administrative documents and determine which of the aspects addressed therein might constitute training objectives. The PDC can be consulted to find these issues.
- Identify the main problems facing the cooperative. To do this, consult the PDC under the heading of the cooperative's organizational management situation, which should list the main problems and difficulties facing the cooperative. Similarly, discussions with the board of directors and other members of the cooperative can be used to identify other problems that are not covered in the PDC.
- Analyze which of the problems identified in the PDC are related to the lack of training. It is suggested to take into account the three categories of problems that are related to training needs stated by (Irigoin, 1998): work climate, quality of work, present and projected changes.
- Prepare a document summarizing the training needs identified both by the cooperative's projection and by the problems it faces, which are associated with training deficiencies.

**Step 4.** Identification of the training requirements of the development project to which the cooperative is linked.

**Objective:** To identify the training requirements of the development project.

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### **Methodological orientations:**

- Review the development project to which the cooperative is linked to identify explicitly stated training requirements. Also review the project objectives with a view to identifying other possible training needs.
- Develop a list of identified requirements.

### **Phase 3. Survey of training needs at the individual level**

**Objective:** Identify individual training demands.

**Step 5.** Individual study of training needs.

**Objective:** Identify training needs according to criteria.

### **Methodological orientations:**

- Analyze the organizational structure and composition of the different areas of the cooperative to determine how the techniques will be applied.
- Apply the interview to all the members of the board of directors, you can extend it to other members of the cooperative with responsibilities. Apply the survey to the remaining cooperative members and contracted workers.
- Process the data obtained according to the instruments designed.
- Prepare a report with the results obtained.

### **Phase 4. Training needs diagnosis implementation**

**Objective:** To carry out the training needs diagnosis

**Step 6.** Determination of training gaps.

**Objective:** Identify the training needs of the cooperative.

### **Methodological orientations:**

- Conduct a comparative analysis between the demands at the organizational level and those of the project to which the cooperative is linked (phase 2) and the training needs identified at the individual level (phase 3).
- Compare the list of training needs elaborated in phase 2 with the training requirements of the project. A table can be used to compare these results.
- Identify the correspondence between the training needs recorded in the list and the project requirements.
- Develop a list that integrates the training gaps identified at both the individual and organizational levels, so that they are all included in a single list.

**Step 7.** Proposal of training topics.

**Objective:** Propose training topics according to identified needs.

### **Methodological orientations:**

- Develop a table that records, grouped by the areas of the cooperative, the training needs identified at both the individual and organizational level, specific to the area. Needs that are common to all areas should appear only once at the cooperative level.
- Propose training topics according to these needs.
- Update the cooperative's training plan.

Main results in the UBPC "La Unión" from the application of the methodological guide for DNC in agro-livestock cooperatives linked to development projects.

The following results were obtained from the application of the methodological guide for DNC in agro-livestock cooperatives linked to development projects in the UBPC "La Unión".

### **About preparation of initial conditions for DNC (Phase 1)**

A working team was formed to develop the DNC. It was made up of the members of the cooperative's board of directors, the provincial coordinator of Prodegan, the person in charge of the planning, monitoring, evaluation, learning and knowledge management system in the project's OTPP and two external advisors, members of the research team.

The team members were trained on how to carry out the DNC, emphasizing the techniques to be applied in each area, the information to be obtained with its application, as well as the way in which the data would be recorded and processed.

Finally, the tasks to be performed were assigned to each of the members of the work team.

### **Regarding the analysis of potential training demands at the organizational level (Phase 2)**

The review of administrative documents (Step 3) made it possible to identify that the UBPC's PDC was aimed at organizing agricultural production, ensuring increased income, environmental improvement and increased milk and meat production. It was also identified a vision focused on feeding the population, together with the improvement of the quality of life of cooperative members and their families, as well as contributing to the substitution of imports in the country. Likewise, the following were identified as specific objectives:

- Enhance milk and meat production
- Implement a quartering system
- Increase protein banks
- Create irrigated areas
- Improve transport equipment and machinery
- Use of renewable sources

According to information contained in the PDC, it was found that the UBPC proposed to increase production by improving conditions for livestock development and training

actions for producers, aimed at increasing the efficiency of herd management, increasing forage areas, as well as genetic improvement of the herd.

To determine the problems caused by the lack of training (suggested in Step 3), an analysis was carried out based on the following categories: working environment, quality of work, present and projected changes. A review of the PDC showed that the main problems reported were due to a lack of resources and technology; none were identified as being caused by a lack of training.

As a result of this step, a list was drawn up summarizing the training needs according to the vision, mission, specific objectives and problems stated in the PDC.

The review of the final report of the Prodegan design (suggested in Step 4) made it possible to identify the training requirements of this project, in order to facilitate the assimilation of the new technologies and the new mechanisms of operation of the cooperative proposed by the project, so training should be designed around:

- Intensive grazing models
- Herd reproductive management
- Procurement of ground and surface water and its sustainable use
- Rotation systems (quartering)
- Management of the environment and natural resources. (e.g. silvopastoral systems)

It was identified that training should not only focus on technical-productive aspects, but also on aspects related to:

- Internal governance of the cooperatives
- Gender approach
- Market analysis and business management
- Administration
- Accounting

All of Prodegan's training requirements were listed.

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### **Referring to the study of training needs at the individual level (Phase 3)**

To carry out the study of individual training needs, interviews and surveys were conducted.

The interviews were conducted with the members of the board of directors (President, Economic, Heads of micro-cowsheds, Head of Production).

The interviewees stated that the general performance of their workers was excellent and each of them affirmed that the training needs were due to the new technologies and operating mechanisms required by Prodegan. They also stated that, if any training was provided, it should be aimed at orienting the cooperative members to the new process of change that the project entailed, since the introduction of unfamiliar technologies created an atmosphere of distrust and resistance.

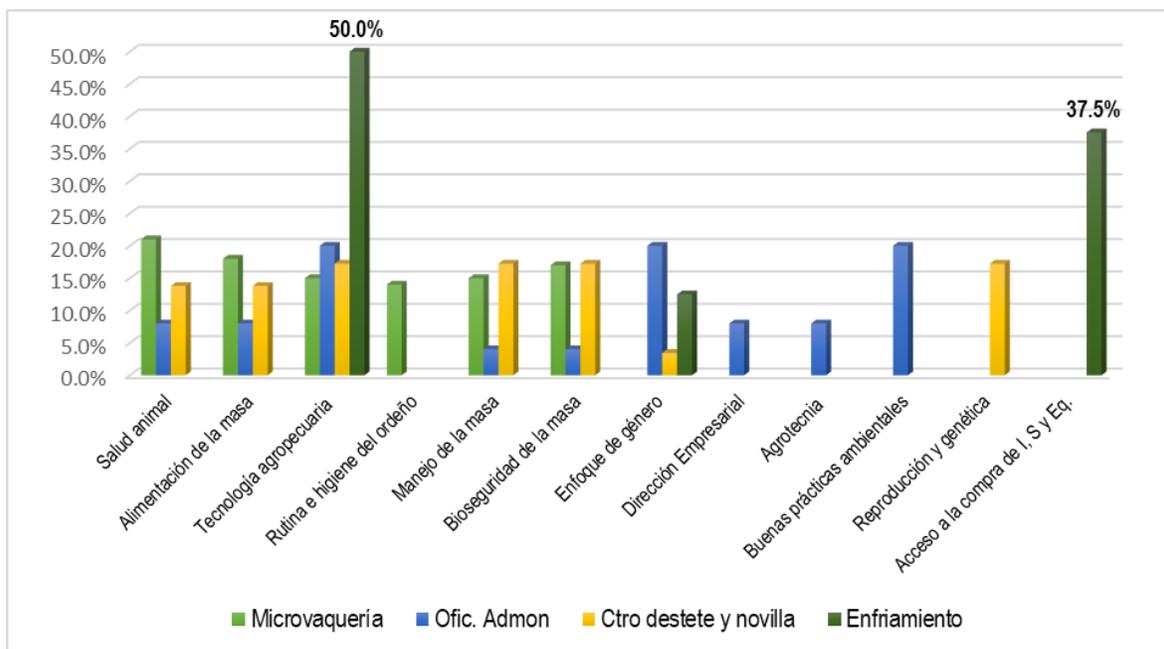
They also highlighted their dissatisfaction with training, recognizing that it was not carried out in a participatory manner and that it did not respond to individual needs. They also admitted that they were unaware of the diagnosis of training needs as a prior and necessary element for the PC.

In order to apply the surveys, first the areas of the UBPC were identified, which included: seven micro-herds, a weaning unit, a heifer center, a small livestock unit, a milk cooling center and the administration office.

The surveys were administered to all the cooperative members active in the UBPC to identify the training needs perceived by the respondents, their levels of satisfaction and their assessment of the work environment.

To analyze the demands for training topics, a matrix was prepared with the percentage distribution of the frequency with which these needs were identified by the respondents in each of the UBPC areas.

The surveys were processed using SPSS statistical software. Figure 2 shows the results of the topics in which the cooperative members recognized training needs.



**Fig. 2** - Training needs by area of the UBPC "La Unión", as perceived by the cooperative members

Source: Data collected in applied surveys

As can be seen, animal health, mass feeding, intensive grazing model, mass biosecurity, gender focus and agricultural technology were the most requested topics. Agricultural technology was identified as a need in all areas and was the most recognized by respondents. However, it is striking that two of the only three topics recognized by this area obtained the highest percentages, indicating a marked need for training in these two topics and an issue to be prioritized in the PC.

As for the opinion of the respondents regarding the training system, 54% of the cooperative members expressed that they were not satisfied or moderately satisfied with the training system.

In relation to the valuation of relations among workers, 100 % stated that they were good.

It was found that, even though the main problems detected in the cooperative were caused by a lack of resources and technology that could not be solved with training, some of them could be solved with training actions, such as deficiencies in current dough handling practices. The inadequate planning of training should also be helped to solve with actions of this type.

Likewise, it was found that the motivational state and the work climate were favorable, so training on these issues was not appropriate.

As a final result of this phase, a list of all the training demands resulting from the processing of the techniques applied was drawn up.

#### **Concerning the implementation of the DNC at UBPC "La Unión" (Phase 4)**

In order to determine the training gaps in the UBPC "La Unión", it was essential to consider the demands at the organizational level, the individual training needs expressed by the cooperative members and the requirements of Prodegan.

It was possible to verify that the PC had planned actions in correspondence with some of the UBPC's objectives, such as the increase of efficiency in mass management and the increase of forage areas; however, it was possible to verify that they did not take into account Prodegan's requirements regarding new technologies such as: intensive grazing models, rotation systems, silvopastoral systems, obtaining subway and surface water and reproductive management of the herd, as well as the management of the environment and natural resources. They also failed to consider training needs in agro-technology, agro-ecology and pharmacology for the treatment of the sick.

Based on the gaps identified, a proposal was drawn up for each area with the training topics that should be guaranteed in the cooperative (Table 2).

**Table 2** - Proposal of training topics for each area of the UBPC "La Unión"

Area or department	Training needs
Micro cowsheds	Animal health Agro-livestock technology Gender equity Animal feeding Dough handling Dough biosecurity Milking routine and hygiene Intensive grazing models Quartering system Increasing forage areas Pharmacology for the treatment of sick animals
Administration office	Animal health Agro-livestock technology Cooperative management and leadership Animal nutrition Agroecology Gender equity Good environmental practices Administration
Weaning Unit and Heifer Center	Animal health Agricultural technology Gender equity Animal nutrition Reproduction and genetics Economic and financial management Milking routine and hygiene Dairy Biosecurity Good environmental practices Pharmacology for the treatment of sick people

Cooling center	Agro-livestock technology Gender equity Access to the purchase of inputs, services and equipment Good environmental practices
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Source: Data from applied surveys collected in table 1

These training topics were taken up by the UBPC board of directors to adjust the annual training plan for each of its areas.

As a reflection and in general, it can be concluded that:

- The analysis of the literature consulted revealed methodological shortcomings in relation to how to carry out DNC in agro-livestock cooperatives that included, in addition to the elements traditionally recognized in the literature, the training requirements of their development projects.
- The study of the 31 agro-livestock cooperatives linked to Prodegan, which were the subject of this study, showed the dissatisfaction of the cooperative members with both the training received and the training planned. It also revealed inadequacies associated with the lack of correspondence between the individual needs identified in the subjects studied, the training requirements of Prodegan as a development project and the actions planned in the PC.
- The validation of the methodological guide for the diagnosis of training needs in agro-livestock cooperatives linked to development projects made it possible to corroborate its methodological value by showing a logical consistency, flexibility and adequate structuring of its phases that made possible the articulation between the demands that originate the strategic projection of the cooperative, the individual interests of the cooperative members and the training requirements of the development project to which it is linked.
- The application of the aforementioned guide in the UBPC "La Unión" demonstrated its practical viability by revealing the inconsistencies between the actions contemplated in its PC and the requirements of Prodegan, and also made

it possible to identify the training gaps in each area and, accordingly, to provide the pertinent information to adjust the UBPC's annual training plan.

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**Conflict of interest:**

Authors declare not to have any conflict of interest.

**Authors' contribution:**

*Amyrsa Salgado Rodríguez, Néstor Loredo Carballo and Zoila Madiú Quiroga Gómez* carried out the conception and design of the study and the critical review of the article with important contributions to its intellectual content.

*Claudia Tamayo Rosabal and Ricardo Morell Morfa* performed the data collection, analysis and interpretation.

*Amyrsa Salgado Rodríguez and Zoila Madiú Quiroga Gómez* participated in the interpretation of data and prepared the draft (first version).

*Amyrsa Salgado Rodríguez and Néstor Loredo Carballo* reviewed the final version to be published.

All authors approved the version finally submitted.



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