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Proposal for a strategic management plan for experimental agricultural and academic farm “El Cairo” of Arauca

Propuesta de un plan de gestión estratégica para la granja académica experimental universitaria “El Cairo” de Arauca

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ABSTRACT

This paper presents a design for a strategic management plan for the Experimental Agricultural and Academic Farm: El Cairo of the Universidad Nacional de Colombia, Orinoquía branch. A non-experimental methodological design was used, from which a situational analysis of the farm was generated, which was used as a basis to formulate and design a Strategic Management plan for a five-year period. It was concluded that the current organization and management plan does not meet the mission objectives of research, teaching, and continuing education, suggesting a need for the articulation of the farm with the administrative and academic structure of the university in carrying out the strategic management plan derived from the current research.

Key words: administration, farm management, agricultural research, extension.

RESUMEN

En este documento se presenta el diseño de un plan estratégico de gestión para la Granja Académica y Experimental Agropecuaria El Cairo de la Universidad Nacional de Colombia Sede Orinoquía. Se utilizó un diseño metodológico no experimental a partir del cual se generó un análisis situacional de la granja, el cual sirvió como base para formular y diseñar un plan de Gestión Estratégica para un período de 5 años. Se concluye que el modelo de organización y dirección actual de la granja, no cumple con los objetivos misionales de investigación, docencia y extensión académica, sugiriendo la articulación de la granja a la estructura académica y administrativa de la Universidad apoyada en la puesta en marcha del plan de gestión estratégica derivado de esta investigación.

Palabras clave: administración, manejo de fincas, investigación agropecuaria, extensión.

Introduction

Agribusiness management is defined as a dynamic analytical process, making decisions and communicating in a manner that achieves the objectives of the agribusiness (Rodríguez, 2002). Similarly, it is also defined as the process undertaken by one or more people for the coordination of labor activities of other people within an agribusiness with the goal of achieving high-quality results, which could not be done by just one person (Drucker, 1993).

In recent years, Strategic Planning has been consolidated into an administrative management tool in order to increase the chances for success when dealing with conflicts or uncertainty within organizations (David, 2003).

In order to meet Mission, Vision, and Institutional policies, the Universidad Nacional de Colombia, Orinoquía branch, has carried out support projects in order to offer the services that it must provide as an institution of higher learning:

training, continuing education and research. Among these projects, the Experimental and Academic Farm: “El Cairo” was established in 2005 in order to carry out activities that promote and contribute to the achievement of its duties as a university (Lugo, 2005).

Currently, the Experimental Agricultural and Academic Farm El Cairo is clearly in need of drastic changes in regards to its mission, structure, and organizational hierarchy, for which it is necessary to design a strategic plan that allows for the optimization of its management in order to achieve the mission objectives of training, research, and continuing education, for which it was created.

In response to this need, the current research developed a work method through the design of a strategic management plan for the farm so that it could join with the mission objectives of the Universidad Nacional de Colombia, Orinoquía branch.

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The concept of strategic planning was created during the 60s and 70s in response to the needs of the time that arose from the goals and challenges faced by companies of the period Drucker (1993).

Ansoff *et al.* (1993) defined strategic planning as the rational analysis of the opportunities offered by an environment, of the strong and weak points of a company, and of the selection of a strategic model that must satisfy, in the best way possible, the objectives of the company; later, Sallenave (1994) stated that strategic planning must include a process by which the leaders order their objectives and their actions over time.

Martínez and Milla (2005) defined planning or strategic planning as the process through which the vision and mission of the company is declared, the internal and external situations are analyzed, the general objectives are established, and the strategies and strategic plans needed to meet said objectives are formulated. Based on the concepts developed by various authors, one can determine that among the principal characteristics of strategic planning, the fulfillment of strategic plans at an organizational level is seen, considered the global focus of the organization.

For Goodstein (2005), a strategic plan is a document that synthesizes, on an economic-financial, strategic, and organizational level, the current and future positioning of the organization. As with all planning, strategic planning is mobile and flexible and must be analyzed at certain intervals to make necessary changes, for which an evaluation plan of results must be implemented.

Finally, it can be said that, for this study in particular, strategic planning constitutes an anticipatory and decisive method for the management that the El Cairo farm must have, based on the current situational analysis of the environment that implicated the participation of all the actors involved, both internally and externally, in order to guarantee an improvement in its operation and achievement of its objectives.

Based on the reviewed literature of the concepts and models of strategic planning and the knowledge of the relevant operational aspects of the El Cairo farm, it became apparent what were the more important factors that affect the trajectory of the farm in its fulfillment of mission objectives that comprise its role as a public entity of research, continuing education, and teaching.

The present study aimed to design a strategic management plan for the farm, based primarily on a situational diagnosis

and secondly on strategies at the financial, organizational, marketing, production, and evaluation levels for an operational period of five years, focusing efforts on the achievement of the mission objectives proposed with its creation.

Methodology and research process

The object of this research was the Experimental and Academic Farm: El Cairo, located at the Orinoquía branch of the Universidad Nacional de Colombia in the municipality of Arauca (Colombia). The development of the research was carried out in two stages: the first stage was exploratory and was used to obtain primary and secondary information needed for carrying out a situational diagnosis of the farm; the second stage was centered on the analysis of the information and formulation of a strategic management plan.

Semi-structured surveys and interviews were used with various actors involved at distinct stages of the farms operations (Administrative, functionaries, operations, and interns) in order to collect information. In order to use forms as information collection instruments, the Online system “Encuestafácil.com” was used to facilitate access for the interns and directors of the farm that were located in other regions of the country. The survey information of a quantitative nature was analyzed using tables and graphs from Microsoft Excel®.

In order to organize the information, the audio of each interview was transcribed and digitized for later analysis. This information allowed for the definition of the operational weaknesses, opportunities, and threats, generating information for the construction of a Strengths-Weaknesses-Opportunities- and Threats matrix (SWOT), a Internal Capacity Profile (ICP) and an Environment Threats and Opportunities Profile (ETOP), following the methodology developed by Téllez and Cubillos (2004).

Using the secondary information and direct observation, an analysis of the financial situation was constructed, as well as of the internal operations and of the organization, generating a diagnosis of the current situation on the farm. With the documents and the interview information, a manual of the functions and procedures were created for each of the activities carried out on the farm.

Based on the theoretical models of Sallenave (1994), Goodstein *et al.* (2005), and Rodríguez (2002) and placing emphasis on the integral model of strategic management of David (2008), a strategic management plan with five components was formulated: financial plan, organization

and structure plan, production plan, marketing plan, and management plan.

Taking into account the theoretical information and using the guidelines of the manual of the management indicators of the better management system (*Manual de Indicadores de Gestión del Sistema Mejor Gestión* [SIMEGE]) of the Universidad Nacional de Colombia, indicators were constructed and formulated for the future evaluation of the management and development of the activities on the farm.

Analysis and discussion of the results

Situational diagnosis of the farm

The compiled information formed part of the operational register of the Orinoquía branch of the Universidad Nacional, with data just for the year 2012. Based on the information consulted on the financial level, the following aspects were noted:

Although it is not the goal of the farm to generate a profit, the system results in a negative value because the revenue is very low in comparison with the operational costs and, therefore, in a non-profitable system. Tab. 1 presents some financial aspects of the El Cairo farm.

TABLE 1. Financial aspects of the El Cairo farm.

Financial Aspect	Value, Colombian Pesos (COP)
Total Revenue for 2012	\$ 27,060,760
Total Costs for 2012	\$144,114,798
Cost/Benefit Ratio	0.19
Profitability of the system	-81%

Source: Posada (2012).

The benefits or values that could be derived from research and teaching should be noted; they are difficult to quantify because, currently, these processes are practically nonexistent at the branch and research projects directly related to the farm are not being developed.

From the administrative structural analysis of the farm, it is evident that the administrative management is carried out in a bureaucratic manner and there is not a clear delegation of labor among the employees.

Another aspect identified during the research dealt with the management of the farm, which depended directly on the management of the branch. For the areas of research and teaching, support programs that reinforce other aspects are lacking (there only exists a research Project in Yuca for master students of the Bogotá branch); that is to say, the

research that has been carried out was done so through academic practicals and there is a lack of ties with external entities for the development of joint projects for the benefit of the region.

In terms of production management, the El Cairo farm, as a place for agricultural production, generates products that are only sold on the farm because there is not a unit specifically dedicated to the marketing of the products (passion fruit, cucumber, papaya, cachama, eggs, raw milk). The processes are geared towards production without planning or control of the costs and the revenue reflects a negative profit.

A study carried out by Posada (2012) indicated that the current mission, administrative, and financial management of the farm is not well defined and the operations are difficult due to a lack of documented evidence and of clear instructions for registering cost and revenue; this author concluded by saying:..."On the experimental and academic farm: "El Cairo" of the Universidad Nacional de Colombia, Orinoquía branch, subsystems that have objectives of teaching and experimentation were not observed. Productive subsystems with incipient technical development were seen, without registers of production, control or accounting. It is recommended that the farm implement good agricultural management practices as well as training for the personnel responsible for the administration of the farm for a general accountability system of the university branch. It is recommended that, in terms of administration and accounting, each production subsystem be conducted in a separate manner and with a strict control of activities and resources..."

The general perception of those that are linked in some manner to the farm according to the survey is that 70% believe that services are provided on a regular basis, with 20% indicating they are good and 10% indicating that they are deficient; these perceptions are based on opinions as well as the academic training and the professional experience in the management and operation of the farm and systems of agricultural production on the part of those surveyed, who indicated the lack of a adequate management model. Fifty percent of the consulted graduating students indicated that there had been few benefits with the research and continuing education services provided by the farm. A reoccurring topic within the development of research (65% of those surveyed) was the need for the El Cairo farm to create a pilot research center at the regional level in order to improve the technical conditions of the local agricultural sector.

Strategic management plan

Based on the development policies, the mission objectives and the vision of the Universidad Nacional de Colombia, this research proposes an organizational structure for the El Cairo Farm of the Orinoquía branch that is based on five basic principles of the global development plan of the Universidad Nacional: Unity, Transparency, Cooperation, Efficiency and Sustainable management.

Mission: The El Cairo farm should articulate its institutional mission of teaching, research and continuing education with the Universidad Nacional de Colombia, Orinoquía branch, through the practical application of academic and research results for the agricultural sector that are developed there. The “El Cairo” Farm should facilitate the inclusion of the Universidad in the region through the transference of production projects to the rural and urban populations in order to support agricultural and environmental development in Orinoquía.

Vision: The El Cairo farm plans to become a center for research and training that is linked to the Universidad Nacional de Colombia, Orinoquía branch, for progress in and sustainable development for the local agricultural sector, with the goal of being a reference model at the production, environmental, and human developmental levels for Orinoquía by 2017.

In accordance with the new mission and vision of the farm, a series of objectives was formulated that will have a 5-year evaluation period and that will continue to be determined:

- Strengthen the farm area for the development of teaching, research, and continuing education activities.
- Provide support for the processes of teaching, research, and continuing education through the development of sustainable production programs that serve as regional models of production.
- Facilitate interdisciplinary projects by linking the university community of the Orinoquía branch.
- Create and maintain a work team that is suitable, efficient, and committed to the new organizational model of the farm.
- Design a strategy that allows the farm to impart knowledge to the urban community as an organization that is committed to the agricultural development of Orinoquía.

Action plan and strategy formulation

It is important to note that, within the development of the management plan that this study proposed, it is vital for the

Orinoquía branch to make the farm a part of its structure and make it a productive branch not only through production projects but also through research and scientific production to meet part of the operational costs of the branch that include resources for the development of these processes as an active part of the university. As a component of the development of the long-term production plan, it is necessary to carry out an analysis of the investments that must be made in the future in order to invigorate the productive processes for the production and transformation of derivative milk products, such as yogurt and kumis.

In developing a new operational plan for the El Cairo Farm, financial strategies must be carried out that will interrelate all the complied information through the use of accounting reports. For which, López (2001) indicated that the evaluation of the entire Project must establish what is the equilibrium point, where a production activity has an exact point where the associated costs of the operation will be covered by the sale of the products or services of the organization. Table 2 presents the current state of the distinct subsystems of the farm.

TABLE 2. Subsystem components of the farm.

Social subsystem	Technical livestock biological subsystem	Technical agricultural biological subsystem
Farm director: agronomic engineer.	Bovine: dual-purpose livestock exploitation (Meat-Milk), cebuina breed, 23 animals.	Cultivation of fruit, vegetables, and forage, area of 33.45 ha.
Farm coordinator: agronomic engineer.	Horses: 7 mares, 1 stud, 1 donkey.	Fruits: papaya, cacao, plantains and passion fruit.
Secretary	Poultry: 400 laying hens, Lohmann Brown breed.	Vegetables: squash, cucumber, melon, tomato.
Field hands (4)	Fish: 6,000 fry distributed in 7 tanks.	Forage: bore, sugar cane, king grass.
Intern: agronomic engineer or zootechnician	Fowl: ducks, chicks, and turkeys (45).	Pasture: native pasture, <i>Brachiaria humidicola</i> .

Proposed organizational structure

One of the critical aspects identified in the diagnostic stage was the uncertainty of the personnel that works on the farm in terms of the directives and functions that each must perform due to the fact that the labor is assigned in an improvised manner and there is a lack of training.

Another aspect related to human resources is the need to implement incentive programs for the cattle and agricultural production so that the employees will feel motivated within the organization and develop skills that will help increase productivity.

The inclusion of workers in research projects will allow the employees to not only complete their tasks but also to be constantly trained for the labor they perform in accordance with the technological needs of the sector, thereby helping the farm to maintain its educative function.

One of the principal objectives of the management plan being formulated is to maintain organizational efficiency in order to reach the target goals, which makes it necessary to maintain an internal organizational system adapted to the context in which the labor is being performed. In order to improve this administrative efficiency, it is proposed that the system of better management (*Sistema de Mejor Gestión* [SIMEGE]) of the Universidad Nacional de Colombia be implemented on the farm, establishing management policies and the use of resources for the strengthening of the administrative management and for improving the competitiveness of the farm. This management system requires a commitment on the part of the directors, both of the farm and the branch.

The application of policies for the administration of human resources will allow for improved work performance and, therefore, make it necessary to constantly promote, apply, maintain, and evaluate the goals that are set. Therefore, the design of training strategies for the personnel is key to maintaining the maximum motivation.

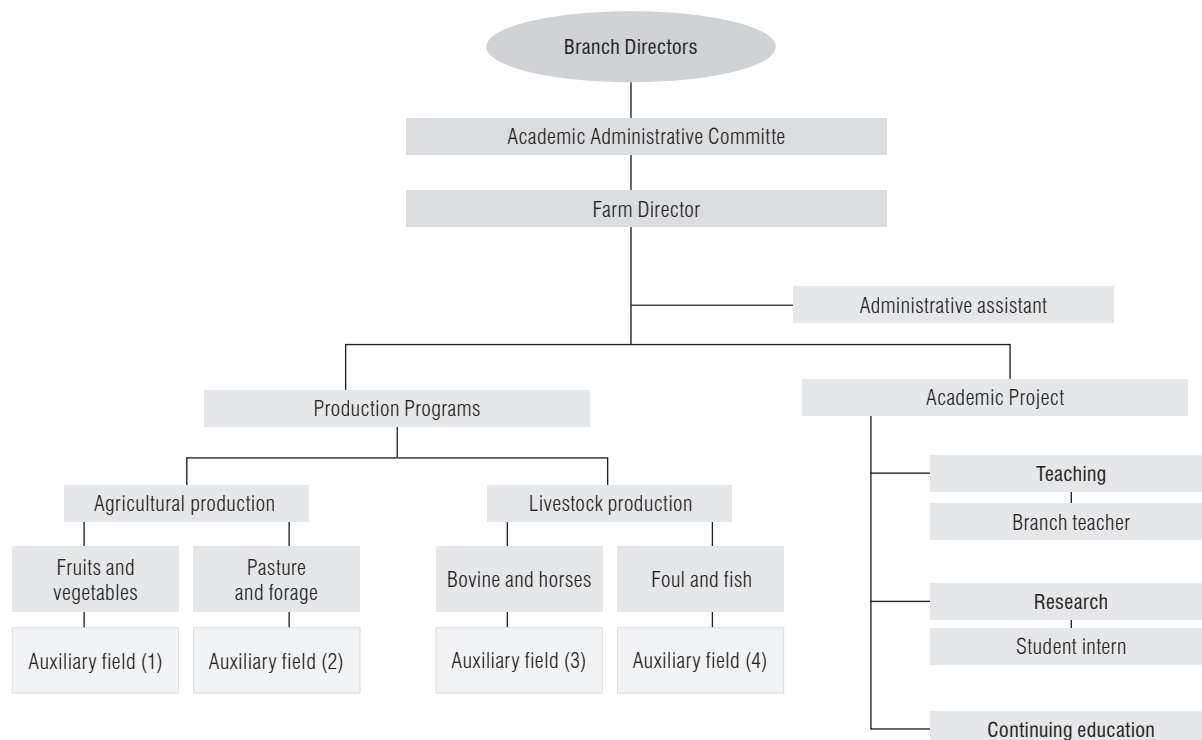
Taking into account the current conditions and need of the farm, Fig. 1 illustrates the organizational scheme of the El Cairo Farm, conserving the current human resources and establishing a new organizational form. It is clear that the changes that can be made on the farm are dependent on the internal operational policies of the Universidad Nacional, Orinoquía branch, and on the decisions that are made for its operations by the Comité Académico Administrativo.

Production plan

The production plan derived from this research has two components: one is a short-term plan and the other is a long-term plan, suggested based on recognizing the productive trajectory of the farm and the identification of the weaknesses, strengths and potentials for agroindustrial production.

In the agricultural production component, three productive systems are notable, which have obtained satisfactory economic results and that have substantially contributed to the generation of farm resources. These three systems are passion fruit, papaya, and cucumbers. The production of passion fruit on the farm takes place seven months after sowing, achieving weekly harvests over periods that have lasted 18 months. With respect to said results, there is a possibility of increasing the cultivation area with tilling in order to maintain a permanent offering and implement

FIGURE 1. Organizational chart of the proposed structure for the El Cairo Farm.



marketing and selling plans with a minimum of two times per week, offering fresh, high-quality fruit.

Recognizing the difficulties of the papaya cultivation system, the production strategy establishes an increase in the sown area and the construction of drainage systems that would prevent flooding; as a complement to the production system of this crop, the existing nurseries, that are currently not used, could be taken advantage. The idea is to take advantage of the existing infrastructure without creating additional costs.

Another system that is considered to be of vital importance to the production level is that of pastures and forage. Until now, a silvopastoral system that guarantees a permanent supply of feed year-round has not been established on the farm. It is necessary with respect to the development of a research program to provide such a system for pastures, which demonstrate better condition with respect to yield and adaptability to the region.

At the livestock production level, better results have been obtained in regards to sale volumes in the production systems of eggs, cachama, and raw milk. For the production of eggs, maintaining the current production system is proposed but in a more intense manner; that is to say, increase the number of hens to fully exploit the production that is found in the spaces that are large enough to increase the animal density in the chicken houses.

The cachama production system is a favored system on the farm because it contains experience at the production level of several years and includes a system of natural and artificial tanks that, given the production knowledge, are being underexploited and valuable space is going unused.

For the bovine production system, it is proposed that, during the first three years and with a staggered method, the current breeding stock be changed through sales or exchanges for milk producing breeding stock in which the heifers comprise more than 90% of the total animals on the farm.

Understanding that agricultural production success is based on three aspects: genetics, nutrition, and environment (Téllez and Cubillos, 2002), a long-term production plan would require the internal strengthening of the farm in order to establish the possibility of advancing towards the production of lactose derivatives.

Marketing plan

Given that the current commercialization is improvised and incipient, there is a need to generate a structured

commercialization scheme with established distribution channels. Clearly, it is not the goal of the farm to generate money, so there must be an emphasis on constructing a self-sustaining development model in which part of the operational costs are derived from the commercialization of the products obtained from the research and productive projects.

The new marketing plan of the El Cairo farm contemplates as its first objective reinforcing the corporate image of the farm; that is to say, an image must be generated that will allow for the identification and recognition of the farm within society and that, at the same time, provides information about its services and products. Therefore, the creation of publicity material such as videos, pamphlets, and an internet portal with commercial and productive information about the farm is essential.

With the information supplied by the farm directors, five products were identified that, in the long-term, have been commercialized on a regular basis, generating revenue that has proven to be advantageous for the low-scale producers of the region; these products are: eggs, raw milk, cachama, passion fruit, and papaya.

One of the marketing strategies that were suggested as a first step was the search for clients with which it would be possible to establish contracts that, in the future, would guarantee permanent production and the positioning of the farm as a high-potential provider of agricultural products, offering its products in supermarkets, restaurants and entities that have formed contracts that guarantee continuous production with the quality standards required by the market.

The institutional mission of the El Cairo farm has always included being a developmental model at the technical, administrative, and productive levels, which is why the developmental model of El Cairo could be considered as contributing to the improvement of the standard of living in the region.

Management plan

In organizations like the El Cairo farm, the quality of the management is manifested in the formulation and establishment of proposals that contribute to the improvement of the processes and achievement of mission objectives, fulfilling harmonic articulation between the superior (the branch) and the productive organization (the farm).

Derived from this research, a proposed strategic management has been formulated in which a higher awareness of

the threats was seen and with advancement towards the formulation of strategies that promote higher competitiveness and dynamics in the development of the processes; likewise, more strengthening was proposed in regards to the structure of human resources to generate higher productivity and change in regards to the degree of ownership of the farm workers. It is necessary to clarify that the implementation of the strategic management system constitutes a new management proposal for the start of implementing a management system that has demonstrated effectiveness in institutional strengthening for agro-livestock companies.

After carrying out the situational analysis of the farm, some of the elements that were formulated for the construction of a new management scheme for the El Cairo farm can be summarized in the following aspects.

In order to achieve the mission objectives, it is necessary to create a new organizational structure that is more flexible to changes and, in which, the articulation of the farm with the branch is guaranteed:

Recognize that the El Cairo farm is a fundamental component of the strengthening of the teaching and research processes that are developed at the branch.

There must be advancement towards the creation of a new focus on human resource training and education on the El Cairo farm, with a view towards incentivizing teamwork and a sense of ownership.

The new management of the El Cairo farm must implement a style with the ability to react quickly in decision-making in order to improve competitiveness.

At the production level, projects that have demonstrated success must be strengthened, with their continuation as a goal.

In the long-term, it is pertinent that the farm search for new alternatives for productive growth, generating products differentiated by quality, with characteristics of innovation and environmental sustainability.

The new management of the El Cairo farm must also be concerned with creating a place for self-criticism that results in actions that improve the efficiency conditions, not only within the economic confines but also in the social, research and continuing education levels.

Management indicators

The competitiveness of an organization is related to a management plan that is based on a situational diagnosis that allows for the formulation of corporate strategies that

necessarily require a system of evaluation for measuring impact and effectiveness. Management indicators are considered to be vital signals of an organization and their continuous monitoring helps to spot weak points, make decisions opportunely and adopt corrective measures, thereby controlling the evolution, over time, of the principal variables and processes (Beltrán, 2003).

Based on the policies of the SIMEGE that governs the Universidad Nacional de Colombia, the management indices form a fundamental complement to planning, verification and management.

Taking into account the objectives and strategies suggested by the strategic plan for the El Cairo Farm and based on the methodological considerations of the Manual de Indicadores of the process of the SIMEGE and the methodology proposed by Beltrán (2003), four management indicators are suggested that could contribute to the evaluation of the results of the plan derived from this research.

Sales growth indicator. This indicator is used to evaluate and control the sale of products from the productive projects; with this indicator, the growth percentage was analyzed for farm sales over a period comprised of the three years prior to the new operational scheme.

Growth of clients or service users indicator. This indicator will constitute a tool for the evaluation of the regional projection of the farm, reflected in the growth rate of clients and service users and as a result of the implementation of the marketing plan.

Based on the nature and the mission objectives of the El Cairo farm, it must be pointed out that the growth of clients indicator could be applied not only for the measurement of the growth in sales of the products derived from the productive projects but also to the requests for internships and/or research projects carried out by students of the Universidad Nacional de Colombia.

Production rate indicator. This indicator will allow for the evaluation of production growth on the farm, measuring the quantity of products that are generated in each of the productive systems, focusing on those that have been indicated as having potential (eggs, milk, cachama, passion fruit and papaya).

This indicator could be applied to the measurement of the scientific production derived from the academic component and the research carried out on the farm, and likewise from

the continuing education activities (classes, workshops, discussions training).

Quantity of training hours indicator. This indicator was made to analyze the training hours provided to the employees of the farm and to evaluate every six months for a minimum period of three years. This indicator constitutes an important aspect because one of the strengthening strategies that it established was the goal of consolidating a human resources plan, with a sense of ownership and constant training.

Conclusions

Currently, the organizational and management model of the El Cairo farm is not suitable from the point of view of the mission objectives of research and teaching.

From the financial point of view, basic information elements that would allow for the determination of profitability on the farm do not exist because accounting information and tools for the evaluation of aspects of vital importance to the financial level are lacking.

It is pertinent to search for and formulate strategies at the management level that would allow for the flow of the dividends that the farm currently generates through its productive projects, reinvesting them in technology for the production processes.

The goal at the administrative level is to promote and generate measures that would allow for taking control of the research and generate, in a joint effort with the university, research agendas that would allow for integration with local and regional entities in order to meet the needs of the agricultural sector of this zone.

Within the guidelines that were determined for the fulfillment of the mission objectives of the El Cairo farm,

the articulation of the farm as a structural part with the Orinoquía branch was established in order to frame itself within the future operational policies of the branch as contemplated in the global institutional development plan (plan global de desarrollo institucional).

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