

## Scientific Paper

# Animal husbandry-forestry integration as alternative for family agriculture in a region of Uruguay

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## Abstract

The objective of this study was to evaluate the cooperation and productive integration agreement between the Montes del Plata company (EFMDP) and the family farmers from the agrarian clubs of the Agrarian Youth Movement (MJA, for its initials in Spanish) in a region of the Durazno department as an alternative of animal husbandry-forestry integration. The methodological approach had a qualitative focus, based on an exploratory and multiple case study. The analysis units were both clubs and the farmers who are members of them. The survey and semi-structured interview were used, as techniques. The evaluation was made from the pertinence, effectiveness and sustainability dimensions. As results, the problems shared by the animal husbandry family farmers who are members of both agrarian clubs emerged, as well as the common strategies adopted to remain producing and living in rural areas. Among the latter the productive integration and associative process stand out, as tangible opportunity to have access to the land resource; and pluriactivity, as mechanism of improvement in the family incomes and warrant of their reproduction in time, on which the productive activities have low incidence with regards to the non-productive ones. It is concluded that the evaluation of the cooperation and productive integration agreement between the EFMDP and the family farmers from the agrarian clubs of the MJA in Durazno is pertinent and effective and its sustainability is moderate.

Keywords: cooperation, evaluation, sustainability

## Introduction

In recent decades in Uruguay a series of transformations have been recorded, among which is the re-structuration of the national farming sector, due to the internationalization and concentration of property, the expansion of some activities of agriculture and forestation (Netzeband and Arbeletche, 2016) and the changes derived from the productive intensification; which have affected extensive animal husbandry, particularly the family one (Gautreau, 2014).

The development of forestation in the country, according to Brasesco (2008), can be divided into four stages, from which only the last two ones will be taken to contextualize this study. The third stage was developed from 1987 to 2005, in which there was a strong expansion of the activity based on the purchase of lands and establishment of forests, basically by the implementation of the Forestry Act 15.939 of 1987 and by the arrival of large transnational companies. This act provided tax incentives, such as subsidy at establishment, national tax exemption, sectorial credits and exemption from tax-

es on the import of capital goods. The fourth stage comprised from 2005 to 2014, and in the agrarian phase a lower planting rate, the progressive internationalization of forestry management and arrangement, and the inclusion of animal husbandry farmers as partners of the multinational timber companies, stand out (Tamosiunas, 2011).

According to data of the General Animal Husbandry Census (CGA, 2011), the forested area is 1 071 000 ha, and represents 6,5 % of the total surface of the country, with a growth regarding 1990 of 485 % (MGAP-DIEA, 2013). Although it is verified that the country has a low forest cover, the plantations are concentrated in certain zones with high density.

On the other hand, the General Animal Husbandry Census (CGA, 2011) showed that commercial farming exploitations, whose main income source is beef cattle and sheep, are formed by 26 480 farms and represent 64 % of the total, with an exploited surface of 11 731 179 ha, which represent 72 % of the total surface (MGAP-DIEA, 2013).

This information shows a decrease of 5,6 % in the area aimed at animal husbandry and of 10,2 % in

the number of farming exploitations, with regards to 2000. If the surface stratum of the exploitations of up to 200 ha, associated to family production, in 2011 they represented 54 % of the total exploitations and 8 % of the surface, and showed a decrease in surface and in number of exploitations around 30 %, with regards to 2000 (Bervejillo and Tamber, 2014).

Based on the above-explained facts, identifying the factors that affect reproduction and permanence of family production systems is highly important for the country; in that sense, Courdin (2013) stated that there are family farmers that resort to associative strategies to solve their limitations and improve their insertion in the market. This is the case of the agrarian clubs Dos Divisas (CDD) and Bañado Grande (CBG), belonging to the Movement of Agrarian Youth (MJA), which were integrated to the Productive Integration Program (PIP) of the forestry company Montes del Plata (EFMDP) in the Durazno Department, Uruguay.

The objective of this study was to evaluate the cooperation and productive integration agreement between the EFMDP and the family farmers from the agrarian clubs of the MJA in a region of the Durazno department as an alternative of animal husbandry-forestry integration, as well as its sustainability.

## Materials and Methods

The field work was carried out in the Durazno department (Uruguay), specifically in its police districts 5 and 10, during the months from May to December, 2015.

The methodological strategy consisted in an exploratory and multiple case study (Yin, 1994), through the evaluation of impact to analyze the cooperation agreement between the EFMDP and MJA, in two agrarian clubs (Bañado Grande and Dos Divisas) members of the MJA. The analysis units were the clubs and the farmers who are their members.

In the case of the agrarian clubs the dimensions and indicators of the impact evaluation methodology were used (Hegedus, 2013; Bono-Mayobre, 2014); while, for the farmers, the indicators were: the socio-productive characterization, economic impact,

associative process and pluriactivity. Semi-structured interviews and surveys<sup>1</sup> were used, as techniques for information collection.

*The study was divided into three stages:*

In the first stage surveys were applied to farmers who owned the farms, members of the agrarian clubs, with the objective of describing and characterizing each of them, their families and the productive units they exploit. From the survey data and for a better characterization of the units and of the economic impact of the animal-husbandry-forestry integration, the estimation was made of the expected incomes from experience. For such estimation available information from the closing of the Monitoring Program of Animal Husbandry Enterprises of the Agricultural Plan Institute for the 2013-2014 exercise, was used (IPA, 2015).

The second stage was based on semi-structured interviews, in order to evaluate the cooperation agreement (EFMDP-MJA) through the impact evaluation methodology. Such interviews were carried out with the farmers who participate in the agreement. The methodological criteria were established through the analysis of three dimensions: pertinence, effectiveness and sustainability, with their respective indicators (table 1).

The last stage consisted in the processing and systematization of the collected information, as well as the analysis and discussion of the results.

## Results and Discussion

The results of the impact of the EFMDP-MJA cooperation agreement are shown for each of the evaluated dimensions with their respective indicators, in which evidence is left of what farmers said through the systematization of their answers.

*Evaluation of the pertinence dimension.* This dimension implies the analysis of the adaptation, pertinence and coherence, of the specific objectives of the cooperation agreement as well as their real results, adapted to the socioeconomic, institutional and physical context, and with the priorities defined by the member farmers of the agrarian clubs.

In this case, the farmers who participate in the EFMDP-MJA cooperation agreement coincided in that it was pertinent, according to the following

<sup>1</sup> Surveys were used only in order to characterize the farmers and productive units; the data from them were not quantitatively analyzed.

Table 1. Dimensions and indicators of the impact evaluation.

Dimension	Indicator	Definition
Pertinence	Focusing	Variables, conditions, activities, which facilitate the fulfillment of the main agreement objectives.
	Satisfaction	Positive and negative perception of the agreement scope, ways of solving the limitations.
	Availability of conditions	Existence of determining factors in the territory for the development of these agreements.
	Construction of the demand	Process, origin, needs and determinants that decided the incorporation to the agreement.
	Means-objectives coherence	Coherence, logic between the available means in the agreement and its explicit objectives.
Effectiveness	Group goals/fulfillment	Definition of the goals set by the agrarian clubs with regards to the agreement and their fulfillment.
	Individual goals/fulfillment	Definition of the goals set individually by the farmers with regards to the agreement and fulfillment.
	Compliance with the productive system	Approval of the production system that was defined and is developed in the agreement.
	Farmers' total and projected incomes	Approximation to the total family incomes, their origin and composition; projection of the incomes from the agreement and their relative contribution to the total family incomes.
Sustainability	Stability of the agreement	Certainty of permanence in time of the agreement, its terms and contractual conditions.
	Dissemination of the agreement	Experience transmission and exchange according to the different levels (farmers, groups or institutions)
	Institutional learning	Incorporated productive and organizational capacities, at individual as well as agrarian club level, from the agreement experience.

focusing arguments: i) possibility of access to the land resource, which until that moment was limited given the intrasectoral competition which has been generated in recent years (Saravia *et al.*, 2015); they stated that: «The productive integration with EFM-DP allows the increase of the family productive surface to take the whole family to the countryside» (CBG), «Capacity of having more surface, more animals, not becoming de-capitalized» (CDD); ii) opportunities it generates in the associated young people, as stimulus to continue their life in the countryside, «Stimulus to continue living in the countryside. The living means, the roots, the vocation, are maintained» (CDD); iii) group process as integration strategy, «Young people participate, become integrated, do» (CBG); and iv) the link with the MJA allows to go beyond local barriers, «The integration with MJA and its group activities enrich and provide other opportunities» (CBG).

The productive transformation process of the last years, with the expansion of soybean agricul-

ture and forestation, has had as direct consequence scarcity and the increase of prices of the land resource. For such reason, for family farmers, the strategies tending to improve their insertion in the system are those linked to associative processes, integration to organizations or productive integration (Courdin and Sabourin, 2018), in order to achieve higher possibilities of increasing their competitiveness and their economic result.

On the other hand, the evaluation of satisfaction was of higher degree for the CGB, whose farmers visualized advantages in economic, social and productive aspects: «To strengthen the group» (CBG), «It is a savings bank, it allows to complete productive cycles and improve commercialization» (CBG), «It allowed to maintain the animal capital» (CBG). While the CDD farmers only identified aspects linked with the access to the land resource: «The good thing has been the field, if we were given a better field» (CDD), «To widen the extension of the field to grow more» (CDD). Nevertheless, both

clubs considered that some aspects were not completely satisfactory, such as: «The negative aspect is the distance to the field, the transport. The work with the animals in the woodland without infrastructure» (CBG), «The production conditions, the agreement terms to make investments, must be improved, the field management should be improved, the stocking rate should be adjusted depending on the evolution of the weight of the animals» (CBG), «We need to meet more; we do get along well, but we do not meet, we should meet more, in order to know more» (CDD). These last criteria are more linked to operational aspects of production, of the contractual guidelines with the enterprise and of the organization of the group itself, which has hindered the development of the production system by the farmers.

The impact of the agreement with regards to the above-mentioned indicators (focusing and satisfaction) was directly related to the stage of the associative process in which each club was. That is, depending on its history, characteristics and particularities.

The CBG has a more associative profile, due to its previous history as group, which has facilitated the consolidation of its union social capital (Woolcok, 2001); while the CDD has a more individualist participation and action, because it has started little time ago and it is in the stage of construction of the union social capital. Nevertheless, the farmers from both clubs visualized the associative strategy as an opportunity for the construction of social capital, which allows to develop forms of resistance and permanence in rural areas.

With regards to the availability of conditions to replicate the experience towards other farmers, although the EFMDP has other available fields to graze and an institutional program of productive integration, the members of both clubs considered as limitations aspects related to the associative process; they acknowledged that there are difficulties in the generation of collective processes or links with organizations that group the farmers in the zone, for example: «There are not more agrarian clubs in the zone so as to participate in these experiences. Yes, there are more farmers with similar characteristics, but they are not organized» (CBG), «the capacity to group is a limitation» (CDD).

Regarding the construction of demand, for the CBG it emerges from several neighbors' concern to gather in order to deal with common problems, such as the theft of animals, insecurity and machinery

availability; which derived in the creation of a «formal» group of family farmers belonging to the outskirts of the department capital who continued working to achieve collective benefits.

For the CDD, which started in 2012, in the framework of activities of the Development Center of the Municipal Administrative Division of Durazno, the demand emerged from the experience of the CBG. Thus, the performance of meetings with farmers was promoted to increase knowledge, generate the group and create institutional links (especially with the MJA), in order to have access to the forestry fields, which was achieved in 2013 when the agreement with the EFMDP was carried out. These differences between clubs were related to the capacity of self-management and trust building that each collective developed (Merino, 2012), through the construction of the union social capital (Woolcok, 2001): the CBG could construct the demand through a need-based process, creating horizontal links (bridge social capital, –Woolcok, 2001–) with the MJA; while the CDD generated its demand by imitation.

With regards to the coherence between the means and objectives proposed by the agreement, it had as central aspect for the farmers again the access to land and the productive and economic possibilities offered to the young people who live in the countryside, which are a motivation for their permanence in rural areas. Such aspects coincide with the ones considered in the focusing variable: «It is coherent in the farmers who have children living in the countryside» (CBG), «It helps to stay in the countryside, because staying for no reason young people cannot do that, although today it is hard to stay» (CDD).

It could be said that coherence is given rather with the mission the MJA pursues than with the agreement objectives, because it includes young people, their families and the community. Nevertheless, the farmers also reported certain inconsistencies, especially related to the surface aimed by the agreement at production. They considered that it does not allow to develop an economically sustainable production system and, thus, would not help in the settlement of young people in the countryside.

Likewise, they stated that such agreement should be accompanied by other measures that would allow, for example, to have access to credit lines, for productive investments as well as for facing production costs. «Not only with this means, it

has to be accompanied by credits, even for purchasing fields. We are complicated with the incomes, there are few farms, few small farms and they are very expensive» (CBG).

*Evaluation of the effectiveness dimension.* The effectiveness dimension tries to identify the results and to evaluate the degree, the magnitude in which they have reached their objectives and the quality of the impact of the actions on the medium where the cooperation agreement intended to intervene.

Regarding the goals, the collectivist attitude of the CBG members should be emphasized, because, according to the farmers' responses, the existence of individual goals is not visualized, aside from those that motivated the construction of the associative process of which they are part today. «Changing the zone with the topic of insecurity, now we all know each other, we are connected, we share and exchange things» (CBG), «In the productive aspect, more productivity, having more animals, growing» (CBG), «Longer term, multiplying the group, being reference in this zone, in the 80 families who live here. Being facilitators of the communication channels, this is missing; the group is not sufficiently mature for it» (CBG). Likewise, the positive evaluation of the fulfillment of such goals stands out: «The goals are fulfilled» (CBG), «Within the group having a hard core of 10 families, which was achieved» (CBG).

In the CDD farmers, the fulfillment was manifested with regards to their objectives in two ways: on the one hand, with the absence of the objectives

in the members who did not have farm or rural settling; and, on the other hand, with purely productive objectives and objectives of capitalization of the farmers with farm and rural settling. «Having the possibility of presenting projects, of strengthening as a group. That the productive topic positively influences the family. The goal is to grow productively» (CDD), «The group aspect was fulfilled as well as being able to obtain a field, sheep with the MJA and courses and talks» (CDD).

Although the groups have elected the productive system to be developed, it has been determined by logistic aspects in the case of the CBG: «calf growing is the system that requires less time», «In addition, price can be expected, as the business comes; and economic aspects in the CDD: «sheep rearing, it is easily accessed by the group members»; both groups showed approval in the election.

According to the estimations of each family's income in each club, based on the considerations described in the methodology, indicators were calculated which evaluated the impact of the productive activities, in general, and the agreement activities, in particular (tables 2 and 3).

In the CBG members, the proportion of the farm incomes in average was 28 % with regards to the total family incomes. From the projection of the annual incomes by EFMDP, it was estimated that they would represent 11 % of the total family incomes. The low participation of the productive (or farm) incomes with regards to the incomes from another family activity, which in most of the cases

Table 2. Indicators of total and projected incomes (USD) of the farmers from the Bañado Grande<sup>2</sup> club.

Indicator	Farmer*					
	I	II	III	IV	V	VI
Other incomes in the farm	Yes	Yes	Yes	Yes	Yes	Yes
Origin of the incomes**	NA	NA	NA	A	NA	NA
Average annual family income (FI)	15 000	10 000	50 000	10 000	40 000	13 300
Percentage (%) of the incomes of the (own) field / FI	25	30	20	40	25	30
Production of self-consumption	Yes	Yes	Yes	Yes	Yes	Yes
Projection of annual incomes by EFMDP	1998	1998	1998	1998	1998	1998
Proportion of the EFMDP incomes in the FI (%)	11,7	16,6	3,8	16,6	4,7	13,0

\*Roman numbers were used to refer to the farmers in order to maintain anonymity.

\*\*NA: not animal husbandry, A: animal husbandry.

<sup>2</sup> Table elaborated from the families with farm, which have or do not have other incomes (the farmer or the husband/wife). The values expressed in dollars correspond to a dollar value of \$24 pesos, approximately.

Table 3. Indicators of total and projected incomes (USD) of the farmers from the Dos Divisas<sup>3</sup> club.

Indicator	Farmer*			
	I	II	III	IV
Other incomes in the farm	Yes	Yes	Yes	Yes
Origin of the incomes**	A and NA	NA	A	A
Average annual family income (FI)	12 000	7 250	18 000	10 000
Percentage (%) of the field incomes / FI	25	30	30	50
Self-consumption production	No	Yes	Yes	Yes
Projection of annual incomes by EFMDP	329	329	329	329
Proportion of the EFMDP incomes in the FI (%)	2,6	4,3	1,8	3,2

\*Roman numbers were used to refer to the farmers, in order to maintain the anonymity.

\*\*NA: not animal husbandry, A: animal husbandry.

is non-farming, stands out. All the farmers had self-consumption production, which complemented even more the family economy and in many cases contributed incomes when this production had surpluses.

In the case of the CDD, the proportion of farm incomes in average was 33 % with regards to family incomes. From the projection of annual incomes by EFMDP, it is estimated that they would represent 3 % of total family incomes. Just like in the other club, these results emphasized the low participation of productive incomes with regards to the incomes from other activities, which in this club were associated with animal husbandry activities.

Regarding the incomes and pluriactivity, the study cases showed that all the farmers had another activity, linked with the service sector, and mainly to non-farming services. Although to the incomes of the farm the projected incomes of the productive integration were added, they were marginal compared with the extra-farming activity.

These results proved that pluriactivity seems to be an important characteristic in the families who are members of the evaluated agrarian clubs. Such performance is associated with a strategy developed by the family farmers for their persistence in rural areas, because it enhances the forms of social and economic reproduction (Schneider *et al.*, 2006).

According to Schneider *et al.* (2006), pluriactivity is not capable by itself of promoting rural development without being connected to other con-

ditions, such as access to land, markets and innovation capacity, characteristics that are included in this experience of productive integration; and credit availability, which emerges as one of the existing needs that should accompany these programs.

#### *Evaluation of the sustainability dimension.*

The sustainability of the cooperation agreement is understood as the degree in which the contractual frameworks, their terms and risks can be maintained in time, depending on the stability of the agreement; as well as due to the acquired learning (incorporated capacities).

For the farmers from both groups there was certain instability of the agreement, given by formal aspects, because they are ruled by 11-month contracts in which the farmers do not have direct interference: «It has a term of 11 months, it is renewed every 11 months. We do not handle that topic. That is directly between EFMDP and MJA and it is reported to us» (CBG), «The conditions are the ones established by them, especially those regarding how to graze, and the ones they set related to safety. Respecting the EFMDP rules, the fulfillment of the safety regulations». This contractual framework conditions the production system that can be organized, the type of animals that are exploited, the performance of investments, etc. «Little stability, it conditions the type of animals that are reared, the system that is set up, the animals which are there must always be on sale» (CBG), «Complying with the regulations, the safety

<sup>3</sup> Table elaborated from the families with farm, which have or do not have other incomes (the farmer or the husband/wife). The values expressed in dollars correspond to a dollar value of \$24 pesos, approximately.

measures, the EFMDP is supposedly going to give us another field, word agreement» (CDD).

The dissemination of the agreement is through direct communication among the farmers and in the spaces in which they participate as group, such is the case of the Rural Development Table of the department. «We are also in contact with the other group, we meet in the Development Table, where we are also in contact with the Municipal Administrative Division. EFMDP disseminates it, there is a video in which we participate and it is in Internet» (CBG). MJA and EFMDP also disseminate the agreement through their web pages, institutional videos and in communication means. The diffusion is not pre-established in the agreement, and does not occur proactively either by the farmers, but emerges from the needs of the institutions/organizations that are members of the agreement.

Among the most important learning topics, the members of both clubs emphasized those basically linked to productive aspects: «management of the animals in the woodland, the composition of the pastures, within the woodland and outside» (CBG), «In the productive aspect we do participate in a lot of talks» (CDD), and aspects of enhancement as group: «The group work as experience» (CBG), «In the field you have to group in order to achieve things, individually it is increasingly difficult» (CDD). Both learning topics are given by the practice in common, by the social interaction within the collective, and it is essential for the construction of a common perception of the resources among their users (Courdin and Sabourin, 2018).

## Conclusions

- The evaluation of the cooperation and productive integration agreement between the EFMDP and the family farmers from the agrarian clubs of the MJA in Durazno is pertinent and effective.
- The arrangement of adequate conditions and the construction of a specific demand, even with differences between clubs in the creation processes, led to the coherence between the means and objectives to be adequate to the needs of the family farmers from the zone.
- The effectiveness of the impact of the agreement between the forestry enterprise and the agricultural family farmers was given by the conquest of goals, established more collectively in one club than in the other; due to the perception of the improvement in incomes; and because of the approval in the development of productive systems.

- The sustainability of these productive integration agreements can be considered moderate, due to the instability because of the terms formally established among institutions, which conditions the sustainability of the production systems.

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Received: December 13, 2017

Accepted: July 11, 2018