Developing local dairy production: the Laiterie du Berger, Senegal

Exemple de développement de la production laitière au niveau local : la Laiterie du Berger au Sénégal

Desarrollando la producción láctea local: la Laiterie du Berger en Senegal

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Abstract. The Laiterie du Berger (LDB) was created in 2006 to market quality dairy produce from farms in the Ferlo region – and more specifically the Richard Toll district – in Senegal. The company’s goal is to ensure a regular source of income for farmers, thereby helping to improve their living conditions. After 4 years in operation, the need was felt to examine the economic and social consequences of the creation of the Laiterie du Berger for its suppliers. This field survey, conducted among LDB’s farmers over 8 months, provides an initial pointer. Its main aim is to gain a clearer understanding of LDB’s farmers and to gauge the impact of the industrial dairy production unit on their cattle-rearing practices, standard of living, and way of life. This paper offers an account of a positive experience of agricultural development through the creation of a social business in Senegal.

Keywords. Agriculture, Sustainable development, Rural development, Economics, Social business

1. ABOUT THE PROJECT

1.1 The Laiterie du Berger

The creation of the Laiterie du Berger in 2006 grew out of an observation made by its founder Bagoré Bathily, a veterinarian by training: “90% of the milk sold on the Senegalese market is imported. In a country where livestock farming is the sole means of subsistence for 30% of the population, this is an aberration.” From the outset, the project was to create a dairy that would ensure a regular income for farmers by collecting their output every day. The Laiterie du Berger seeks to create value with local milk, mainly by producing yogurt from fresh milk. The milk is transformed industrially and the dairy products – yogurt or “lait caillé” (milk curds) and crème fraîche are packaged at the Richard Toll production site. The yogurt is then marketed in Dakar, Saint Louis, and the Richard Toll district.

The business has grown rapidly: In 2006, 200 farmers supplied milk to the dairy; in 2010, almost 800 farmers were involved, and the volume of milk collected has multiplied fourfold. Today the Laiterie du Berger sells some 3800 liters of yogurt per day.

As the only industry in Senegal producing yogurt from collected milk, LDB has taken on a sizeable challenge, which has earned it the attention of several international groups and the status of “social business” (defined by Professor Yunus as a non-loss, non-dividend company focused on a social objective).

To collect the milk from the bush in the mornings and evenings, the Laiterie du Berger canvassed farmers within a 50 km radius around Richard Toll, and organized collection circuits. The relationship between the Laiterie du Berger and the farmers is non-contractual and based on trust. Any farmers who want to supply the plant are given a numbered churn, by which they are identified to the plant, and which enables the plant to monitor their output and pay them accordingly at the end of the month. Churns are frequently shared between several farmers belonging to the same family or compound.

The purchase price paid to the farmers for a liter of milk is set at FCFA 200 (approx. 0.30 euros = US$ 0.39).

To mitigate the effects of seasonality, the Laiterie du Berger sells animal feed (rice bran, groundnut cake) to milk suppliers at competitive, stable prices during the dry season. Throughout this period, farmers can take away a number of bags of feed proportional to the volume of milk supplied to...
LDB. The cost of the feed is subtracted from the milk payments. In 2010, the Laiterie du Berger sold FCFA 13 millions’ worth of feed to its suppliers.

Finally, the collection team conducts missions in the bush aimed at improving collection (prospecting for new farmers, rationalizing the road network) and providing technical support for farmers (raising awareness of milking hygiene, dairy herd nutrition, and veterinary advice).

1.2 Cattle farming in the Senegal River delta

The Dairy is located in the Richard Toll district, near the Senegal River delta, an area characterized by relatively low population density, with fewer than 22 inhabitants per square kilometer (Pole Pastoral Zone Sèche, 2005), 100 km and more from the urban areas in the west of Senegal. The towns of Richard Toll and Dagana, and the weekly markets of Niassante, Bokhul and Diagle, are active trading hubs for farmers who live in isolated compounds.

Cattle farming in this region follows the extensive model, based on the use of natural resources. The herds and their herders move around every day in search of fresh water and pasture, as well as undertaking a longer annual migration (transhumance during the dry season). The annual precipitation of between 300 and 600 mm falls almost entirely during the wet season (July to October). The low rainfall in this pastoral area directly influences the water table and the flora during the dry season (November to June). It also reduces the options for putting the land to agricultural use, which is why it has been referred to as an area with a “pastoral vocation” (J-D. Cesaro, 2009). Seasonality (wet season/dry season) is a determining factor for milk production: during the dry season, water and pasture become scarce, greatly affecting milk output. In the wet season, water and pasture are abundant, making for a high milk output, but the waterlogged tracks are impracticable, making access to dairy production points difficult. Moreover, in the context of extensive farming, farmsteads are sparsely scattered, which pushes up milk collection costs.

1.3 Method and objectives of the survey

The method employed was empirical, involving a qualitative survey based on a questionnaire of 43 questions, with each interview lasting about one hour. The surveys were conducted throughout the day, with a selection of villages to visit. After greeting the villagers and explaining that we had come to do a survey about the relationship between the farmers and the Laiterie du Berger, we would take a farmer to one side and go through the questionnaire.

For greater immediacy of contact with the farmer, the questionnaire was translated into Pular. The questions dealt with collection, rearing, and relations with LDB. Questions that were too abstract, or which called for quantified estimates, were poorly understood by the farmers. This made it difficult to evaluate the economic impact of milk collection: to measure precisely whether LDB has raised the farmers’ standard of living one would need to know their previous incomes (from barter, as well as livestock assets). Such data were not collected prior to the creation of LDB and the farmers frequently do not see their income in easily quantified terms (for example, the notion of percentage is not well understood). The results are therefore mainly qualitative rather than quantitative.

In terms of sampling, we targeted “churn owners”, i.e. those whose names were registered with the Dairy, as they were the people who were supposed to be in charge of the milk supplied to the plant. Sometimes, however, it proved interesting to interview other “members of the churn” in order to obtain a different perspective, and also to have a woman’s view. The women often register with the Laiterie du Berger in their husbands’ name, but are every bit as involved in the management of the churn and are perfectly capable of answering the questionnaire. Thus, 123 surveys were carried out on 364 churns active in 2010; i.e. 1/3 of the churns were surveyed. For logistical reasons (vehicles, translators, mobile farmers), the selection of farmers was random, dictated by the missions of the bush collection team and the availability of the farmers. To obtain a fair cross-section, however, we were careful to cover all of the collection areas and to interview a representative number of farmers in the same area wherever there was a concentration of farmers.
2. RESULTS: THE IMPACT OF LDB

2.1 Managing collection

2.1.1 Number of farmers involved in LDB's milk collection

Frequently, more than one cattle owner from the same compound will fill the same churn. For each churn, there are on average 2.2 cattle-owning farmers and 3 persons available for milking – almost always women. 38 farmers out of the 123 respondents (i.e. 31%) employ a paid cowherd. On average, therefore, there are 5.7 persons (cattle-owning farmers, milkers, paid cowherds) involved in each churn, making in all about 2,069 people involved in the sale of milk to the Laiterie du Berger.

Collecting milk in the bush is difficult: there are no clearly defined roads, the pick-up trucks that criss-cross the bush every morning and evening are not refrigerated, and they can only carry a limited number of churns. This imposes a number of constraints: collection is restricted to a radius of 50 km around the plant, as the transportation time must be kept short to avoid the milk going sour. Also, it is preferable if the churns are full, and therefore that several farmers contribute to the same churn. The immediate objective, therefore, is not to find new suppliers (there are very few farmers who live in the collection area who don’t provide milk to the factory) but rather to find solutions so that the existing suppliers can supply more milk: this depends primarily on access to water and on the provision of feed.

2.1.2 The farmers' satisfaction: trust is the key

The farmers are not fully satisfied with the collection system: half of them declare that they have had problems with their churn (bad cover, milk lost, insufficient number of churns...). The success of the undertaking – to collect milk from Peul farmers in the Richard Toll district – also depends on the relationship of trust between the farmers and “l’usine (the plant or factory)” (as the farmers call it). It is important for the collector (who acts as the farmers’ spokesman vis-à-vis the Laiterie du Berger) to help keep account of volumes per churn in order to avoid conflicts, as most of the farmers cannot read their monthly statements. If the proceeds are not shared equitably between the members of the same churn, that farmstead may stop supplying milk until the conflict is resolved. Churn-sharing (where multiple cattle-owners contribute to the same churn), while useful for LDB, is therefore often problematic for the farmers, who will only agree to share with family members whom they really trust.

The farmers are paid every month, cash-in-hand, as they have no bank accounts. Payday is another key moment that calls for a very methodical approach. It is often delayed due to management or cash-flow issues. This is the main source of discontent among the farmers, who are discouraged from supplying milk when the money is not forthcoming. Good communication is therefore crucial for gaining the trust of the farmers, who have no means of tracing their milk through to the plant.

2.1.3 Traditional uses of milk and selling to the Dairy

Milk traditionally plays a large part in the diet of Peul families: home consumption accounts for more than 40% of production, according to Corniaux et al. (2009). The milk that is not consumed is sold in the form of butter or curds on local markets. It can be bartered for rice, oil, or any other foodstuff used in preparing meals. 84% of the respondent farmers said that they used to sell or barter their milk. Milk therefore covered part of the “daily spend”: 50% of the respondent farmers said that it was a profitable business, but it remains a tiring activity (carrying dairy products to market in a calabash, waiting in the sun, etc.) and they could not always be sure of selling their wares. In the dry season, when milk is scarce, a liter fetches a good price at the market, but during the rainy season, milk becomes so abundant that it loses all value: the farmers cannot even sell off their surplus. The arrival of the Laiterie du Berger enabled these farmers to find a buyer for their production at a period – the rainy season – when it had no commercial value. Fewer farmers supply the Dairy during the dry season. There are certainly some practical constraints involved here: the cows dry up during the dry season, and some farmers move away with their herds to other pastures, but there is also a degree of opportunism on the part of some farmers, who take advantage of the relative scarcity of milk during the dry season to sell their milk for a better price at the weekly market. 27% of the respondent farmers said that they continued to barter or sell milk at the market.

2.1.4 Impact on incomes

In light of the traditional uses of milk (home consumption, barter) and farmers’ cattle selling strategies (the herd must not be reduced unless absolutely necessary), it would be inappropriate to speak about poverty to describe the farmers’ situation. While their incomes are low in monetary terms, they possess significant livestock assets. Wane (2010) proposes that we speak instead in terms of vulnerability: if a major crisis occurs (an epidemic, a drought), farmers can have their entire assets wiped out and find themselves destitute.

### Table 1. Remuneration of Laiterie du Berger farmers per churn in 2010

<table>
<thead>
<tr>
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<th>Dry season (November-June)</th>
<th>Wet season (July-October)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average remuneration</td>
<td>30,896</td>
<td>62,697</td>
</tr>
<tr>
<td>FCFA/month</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median remuneration</td>
<td>25,428</td>
<td>47,610</td>
</tr>
<tr>
<td>FCFA/month</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum remuneration</td>
<td>186,558</td>
<td>345,734</td>
</tr>
<tr>
<td>FCFA/month</td>
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By offering a daily collection service, LDB enables farmers to make milk a bigger source of income, and thus to enjoy additional purchasing power. In this case it makes sense to talk of monetary impact. On average farmers supply 11.2 l per day in the wet season (for an average monthly income of FCFA 56,000, or €85/$111) and 5 l during the dry season
(income of FCFA 25,000 or €38/$50). Volumes per day and per farmer vary throughout the year, ranging from 0.9 l to 130 l.

71% of respondents feel that selling their milk to LDB has enabled them to improve their standard of living, while 9% continue to think that the traditional uses of milk (bartering milk curds and butter) is more profitable. The remaining 20% consider that their standard of living is unchanged. All of the respondents said that they used the money from the milk to buy rice and oil. If any money is left over, it is generally the women who use it to buy clothes and beauty products. For the top producers, the sale of milk to the Laiterie du Berger enables them to spend money on items other than day-to-day expenses (14 farmers obtain an average monthly income of FCFA 100,000). Items cited by the farmers include furniture and the construction of a cement-brick house. The price offered by LDB (200 FCFA unchanged since 2006) is considered as insufficient as compared to the traditional markets’ price even though it can hardly be compared (the factory buys raw milk at their door while what is sold at the market is butter and the farmers have to walk there).

2.2 Impact on cattle-rearing practices: a form of modernization?

2.2.1 Herd size and the sale of cattle

Respondents’ herds tend to contain 80 head of cattle (median response to the question: How many cattle do you have in total?) and 15 lactating cows (median figure); dry cows are not listed here. The reliability of this data is, however, questionable: herd size is a taboo question among farmers (9% of the farmers interviewed refused to answer that question) and many of them really do not count their cattle (some gave approximate or inconsistent figures).

68% of the farmers interviewed said they were now selling fewer animals than they used to, replacing the sale of cattle with the sale of milk. The sale of cattle is increasingly reserved for major occasions. For example, almost all of the farmers who said they no longer had any bulls or bull calves had sold them to go on pilgrimage to Mecca.

The reduction in the sale of cattle has varying consequences. For the farmer, a growing herd is an asset and a status symbol: “If you see bull calves in a herd, it means the farmer is doing alright” Thierno Idrissa Sow (a Marabout, and supplier n°12). However, the presence of a larger number of animals could overstretch the resources of the bush, affecting pasture quality and access to water.

2.2.2 Permanent settlement: a clear trend

Although the population is relatively sedentary, transhumance is still practiced to cope with the lack of pasture during the dry season. Of the suppliers interviewed, 63% said that they migrate with their cattle, but only 11% travel with the whole herd outside the collection area. The others keep dairy cows in the village, or migrate along the collection routes and continue to supply the Dairy.

![Figure 3. Transhumance, a phenomenon on the wane](image)

The trend towards permanent settlement preceded the arrival of the Laiterie du Berger, but the latter has had an influence on farming practices. Some farmers, for example, keep dairy cows in the village so that they can continue to sell milk to LDB (category B). J-D. Cesaro coined the term “micro-stabulation (micro-dairy-sheds)” to designate this practice. In 2010, after the Laiterie du Berger had been in operation for 4 years, 40% of the respondent farmers no longer migrated their dairy cows, and a further 37% no longer migrated at all.

2.2.3 New feeding practices

During the dry season, 21% of the respondent farmers feed their animals a combination of concentrate and forage, 73% distribute concentrate only (often the product sold by the plant), while 2.4% make do with forage alone and 3% give them nothing. Those who combine concentrate and forage supply more milk than average, and 39% of the respondent farmers say that calving has increased since they started using feed. The feeding of cattle in the dry season is a fairly new phenomenon; previously, farmers preferred to set off in search of new pasture. A good feed supplement during the dry season is crucial to enable dairy cows to supply milk in sufficient quantity.

Yet 75% of the interviewed farmers complain about LDB’s food distribution system. Even though they have recognized the need of feeding their cattle, they say the quotas system (based on milk delivery) is not efficient, the transport from Richard Toll to their village is expensive, and LDB had some shortage of feed at critical times. Food distribution is a crucial service, often cited by the farmers as the main advantage of delivering to the factory, and LDB could improve the organization of this service in order to insure the volume of milk provided during the dry season and to keep its farmers all year long.

2.3 Securing a sustainable dairy

2.3.1 Access to water: a critical need

Only 55.3% of respondents have access to water within 3 km (categories A and B). 35% do not have access to a well. 13%
do not have free access to a water point (river or well) – their only water supply is carried in pitchers from boreholes (located between 4 and 17 km from the village, depending on the respondent). Farmers suffer from chronic water shortages during the dry season, and improving access to water by drilling more boreholes and wells would be a major step forward for dairy production.

2.3.2 Women’s role in milk management

For the women, the impact of the Laiterie du Berger cuts both ways. On the one hand, selling milk to LDB makes life easier for the women, who used to walk for miles to sell the milk at market. On the other hand, when they sell the milk to LDB, the income is no longer daily but monthly, and part of it is absorbed by the purchase of feed during the dry season. Moreover, the income from milk is no longer systematically received by the women directly when it is sold to LDB, as it is often the men – the heads of family – who come to pick up the pay packet from the Dairy at the end of the month. Despite a newfound interest in milk production when it is profitable, there is still a preference for leaving milk management – and especially the actual milking – to women.

2.3.3 Greater visibility for farmers and their cause

The Laiterie du Berger cannot single-handedly shoulder the responsibility for developing cattle-farming in the Richard Toll region, but its project is raising interest among other actors in the field. 22% of the respondent farmers said they had been visited by people trying to organize projects since they signed up with the Dairy. For 43% of them, this led to tangible results (construction of wells, or deferred grazing areas). The Laiterie du Berger therefore provides better visibility of the needs of Senegal’s dairy producers, and a window on the outside world for farmers who live in often very isolated areas.

The arrival of the Laiterie du Berger has also extended the farmers’ range of options. They are starting to view the future differently. In response to the general question: “What are your projects for the future / what do you see as the most promising line of work for your children?”, 58% of the respondent farmers select the sale of milk to plants such as LDB. And 19% are even thinking about switching to modern farming techniques: keeping a few good dairy cows, sedimentarizing them, building pens and sheds, and providing them with feed.

There is therefore a demand among farmers to optimize their dairy production, in order to provide a stable source of income and a more comfortable way of life. However, there is also a degree of risk-aversion and a wait-and-see attitude. Thierno Idrissa Sow, a farmer from the village of Kouel, told us in an interview that he does not want to take the risk of investing in a well or a dairy shed, because he lacks technical advice and because he has no way of knowing what the future has in store for him. Indeed, the farmers’ fate is still largely beyond their own control.

Yet, while the LDB offers new development prospects for the farmers, it has also created a heavy dependence on the factory, which is a problem when the LDB stops collecting. Hence, the LDB has often varied its collection routes to keep its rentability regardless of the social impact of the interruption of the collection in a given area. The LDB, with the technical support of outside partners, could therefore increase its services towards the farmers to secure the production and maintain the collection routes.

3. Conclusions

Since 2006, the Laiterie du Berger (“LDB”) has offered farmers a milk collection service, from farm gate to dairy. In 2010, LDB collected 364 churns a day and directly involved some 2,000 people (cattle owners, milkers, herdsmen). For the farmers, it represents the guarantee of selling their milk every day, almost from their front door.

The large number of farmers involved with the LDB illustrates the opportunity that it represents for them to secure their milk production and earn a living out of it. However, the collection process still needs to be improved, as does the way the Laiterie du Berger project is presented to the farmers. The farmers’ perceptions of their collaboration with LDB, and their satisfaction levels, are far from incidental; they have a direct influence on the volumes of milk supplied. In a context where illiteracy is the norm, and where educational levels are low, trust and tangible demonstration carry more weight than economic rationality.

The work of the LDB has had various effects on the farmers:

First, it provides them with a more reliable source of revenue. The average monthly income of LDB’s farmers is estimated at FCFA 41,500, with some of them earning over FCFA 100,000. Selling milk to LDB is becoming a credible alternative for meeting the daily needs of many families. Farmers gain the assurance of being able to sell off their production during the wet season as well as the dry season. Yet the unchanged price paid per liter since 2006 is often considered too low by the farmers.

Secondly, the farmers are changing their practices: the possibility to sell their milk has given them incentives to enhance their milk production, sedentarizing their cattle and feeding them during the dry season. The LDB food service means that the farmers can obtain feed to ensure the survival of their animals when there is no pasture left. In their view, this is the main benefit of supplying the Laiterie du Berger.

Thirdly, the commercial relationship with LDB has had some impact on traditional practices (selling the milk to the market or keeping it for home consumption). Whereas the traditional practices seemed constractive, the partnership with the Laiterie du Berger offers farmers a wider range of choices. The women, who used to walk miles every day to carry the milk to market – with no guarantee of selling it – can now stay at home while still earning money from doing the milking. Likewise for the herdsmen who used to cover vast distances across the bush in search of pasture during the dry season: 77% of the respondent farmers have now sedentarized at least their dairy cows (40%) or even their entire herd (37%).

Finally, selling milk to the LDB is a first step towards the
valorization of their production. “If it carries on like this, one day, the milk will be able to feed my children,” says Binta Kouna Sow from the village of Lewane.

To reach a sustained milk production level and insure the viability of the LDB, some basic services and technical support to enhance productivity should be provided. The LDB with its partners have initiated some services (deferred grazing and artificial insemination), offering farmers a glimpse of the development potential of their activity; but access to water remains the absolute pre-condition for enabling cows to produce milk in greater quantity.

We could thus discuss the extent to which a business like the LDB can have a significant impact on lives of milk providers and still remain viable. It seems that a private initiative can not solve everything, and the involvement of other actors such as public institutions for the provision of public goods and private organizations for technical support has a role to play to structure the milk sector and insure sustained development for the farmers of the Diéri.

4. Acknowledgements

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