

Dairy Policies in Algeria in Search of Sustainability and Autonomy: Reforms, Challenges and Results

Received: 14-02-2025

Accepted: 02-06-2025

KACIMI EL HASSANI Sawsan*: Maître assistant A – Université
Alger3

Email: sawsan.kacimi@gmail.com

BELMAHDI Tarek: Professor- University of Algiers 3

Email: tarek.belmahdi@gmail.com

Summary

Since 2009, dairy policy has been aimed at revitalizing the milk sector by providing subsidies to all links in the chain. As a result of changes in the overall context of milk production, adjustments were made in 2015 to cope with the rise in feed prices. As a result, there has been an improvement in indicators such as production and collection. However, the conclusions drawn only partially meet the country's requirements, as recourse to the international market to offset the deficit observed is a necessity and a reality that has remained unchanged since independence. Importing milk powder and animal feed represents a considerable cost to the budget.

Keywords: dairy policies, subsidies, importations, dairy sector, self-sufficiency, Algeria

Jel Classification Code : Q18, O13, P36

*Correspondant author

1. INTRODUCTION:

The dairy sector is a vital part of the Algerian economy, accounting for a significant share of agriculture and the agri-food industry. It has a direct impact on food security and contributes to food self-sufficiency objectives. The government's main objective is to achieve self-sufficiency in dairy products. However, the country is still dependent on imports, particularly of milk powder, to supplement its needs. As a result, Algeria is the world's second largest importer after China, making it one of the world's leading consumers and importers of milk powder. This situation is due to the constant shortage of local milk production, combined with growing demand from the population. Demand for milk and dairy products in Algeria is high, given that the average consumption of animal proteins is relatively low, and milk plays a crucial role in the nutritional balance of the population. Indeed, average milk consumption per capita is 130 liters per year, with an estimated 157 liters in 2015, making it the leading milk consumer in the Maghreb, followed by Tunisia, which consumes 110 liters/year, while milk consumption in Morocco is around 62 liters per person per year, a consumption below the standards recommended by the World Health Organization ONS (LEBIAD Z. et al., 2017). Algeria's consumption thus reaches nearly 6 billion liters, but the country is far from achieving self-sufficiency. With 3.4 billion liters, production only covers around 55% of its needs, including only 900 million liters of raw milk. Around 2.5 billion liters of milk are imported in this way. The fall in hydrocarbon prices in the early '80s and the negative impact of imports on the national economy prompted the government to reflect on and implement a series of reforms to encourage local production and reduce dependency. However, the government wishes to reverse this trend, which has

persisted since independence, by granting subsidies to the various links in the chain.

After independence (In 1967), raw milk production reached 350 million liters, but in just forty years, it has exceeded (03) billion liters in 2017(MADR, 2018). However, this increase remains inadequate due to the faster progression of final demand and the strengthening of industrial capacities. Nevertheless, it should be stressed that milk production in Algeria is insufficient by global standards, averaging 3148 liters per cow each year. These shortfalls in the production of dairy farming systems compared with current capacities stem from a multitude of varied structural and management problems which tend to reduce the expected production gain. As a result, the dairy sector finds itself at the heart of these changes and policies devised and implemented by the State, which through its dairy policies aimed first and foremost to improve the population's level of self-sufficiency and consumption of milk and dairy products, by acting on several fronts, namely: Genetic improvement of livestock, through subsidized imports of pregnant heifers with high dairy potential, intensification of fodder production by developing irrigated crops, and improvement of animal health through control and vaccination measures. At the same time, we're encouraging investment in all three links in the chain (on-farm, collection and processing).

This study shows that all these measures have failed to produce the expected results. Indeed, milk imports continue to consume considerable amounts of foreign currency. The recent rise in milk prices on the international market should be beneficial for the development prospects of local production. In recent years, strong tensions have been created on the national market, with government intervention attempting to alleviate these tensions by granting heavy

subsidies to imported milk powder and, paradoxically, to local production. Despite the progress made by the various policies, the situation remains virtually unchanged, with massive recourse to imports to offset the shortfall in local supply.

Against a backdrop of strong domestic demand and dependence on imports, what are the implications of Algeria's dairy policies for national milk production? Despite the government's efforts to support the sector, how do these policies manage to meet the structural challenges of the dairy sector, while exploiting opportunities to strengthen food sovereignty and reduce the country's economic vulnerability?

The main points discussed in this article stem from this problem:

- Presentation of the potential opportunities offered by dairy policies to achieve self-sufficiency in the face of food security challenges;
- The challenges of milk production and collection in Algeria, between dependence on imports and structural problems;
- The impact of these policies on the country's ability to increase milk production and achieve self-sufficiency. Measuring the effectiveness of subsidies: whether they have actually led to an increase in production, or whether they have been diverted or ineffective.
- Measures how dairy policies influence competition between local producers and milk powder imports, and assesses whether policies reduce import dependency.
- Analyzes the impact of policies on milk prices, at both producer and consumer levels.

In order to answer the above questions. It is essential to collect data on milk production before and after the implementation of

specific policies. This includes the quantity of milk produced, productivity per cow, milk collection and consumption trends. Policy performance indicators: Measure the performance of dairy policies against government-defined objectives, such as increasing national production, reducing import dependency or improving working conditions for farmers. At the same time, we compare the impact of Algerian dairy policies with those of other milk-producing countries (Morocco and Tunisia).

2. Dairy policy and the challenges of food security:

Food security plays a key role in agricultural development policies in many parts of the world, including Algeria, which is one of the world's leading importers of milk powder. The introduction of the National Agricultural Development Plan (PNDA) in 2000 followed a series of reforms in the agricultural sector, as part of a program to support economic recovery (MAAP, 2009). According to Boukella (2008), the authors of this program, which he describes as both multi-dimensional and ambitious, are based on the problem of refocusing actions and support on the farmer and the farm. According to Souidi and Bessaoud (2011), however, these initiatives have had little or no benefit for rural households living in economically and socially vulnerable areas. Indeed, the projects overseen by the PNDA were characterized by their top-down approach and centralized management. Rural communities played a limited role in identifying needs, selecting solutions and implementing projects. Following the extension of the Ministry of Agriculture's remit to include rural development in June 2002, the objectives of the PNDA were extended to the revitalization of rural areas, the improvement of living conditions and the promotion of artisanal products (MADR, 2002). It should be emphasized that the

practical implementation of the PNDAR brought about a break with the state of disinvestment in the sector and an improvement in the average growth rate of agricultural production, which stood at around 14% for the period (2000-2003) compared with 3.3% during the decade (1990-2000).

The food crises of 2007-2008 confirmed the extreme sensitivity of the issue of food security and underlined its close link with national security and sovereignty. Indeed, prior to 2008, the market was favorable to dairy imports due to the considerable increases in milk production in the main producing countries. The food crisis in 2008 resulted in a spectacular rise in food prices, and the diagnosis of the situation of the national agricultural sector revealed its strengths and weaknesses, as well as enabling an assessment of the agricultural development policies implemented since independence. This analysis led to the adoption in 2009 of a new dairy policy, Agricultural and Rural Renewal (RAR). The implementation of this policy is based on the adoption of various incentive measures, with the aim of regulating programs and achieving development objectives, as well as improving mass-consumption production, such as cereals and milk. With regard to intensification, agricultural renewal has two objectives: to increase national raw milk production and to increase the volume of raw milk collected. To achieve these objectives, three programs have been set up:

Firstly, a program to upgrade dairy farms, which aims to improve rearing conditions by rehabilitating and refitting barns, automating milking and installing on-farm raw milk conservation equipment. The program also aims to make feed more accessible by developing both areas reserved for forage and silage, and by developing artificial insemination and embryo transfer.

A second initiative is aimed at increasing the number of dairy cattle and the collection of raw milk, focusing on the development of high-potential heifer production and imports. To achieve the collection target, networks of primary collection centers, collectors and dairies are planned. The Office National Interprofessionnel Laitier (ONIL) is responsible for overseeing this raw milk collection system, which has been approved by the Ministry of Agriculture and Sustainable Development (MADR) to meet collection and dairy farming development targets. Other agreements are then concluded: ONIL with dairies, dairies with collectors and dairies with breeders.

Three institutions are responsible for implementing a third program of technical and financial support for the dairy industry:

- ITELV is responsible for technical assistance to breeders, training and extension. CNIAAG is responsible for artificial insemination and embryo transfer operations. For the development of forage crops, ITGC is responsible for technical assistance.
- Financial support is provided through three schemes: RFIG interest-free credit; FNRPA to support the production, collection and integration of raw milk; and FNDIA to finance on-farm investments (upgrading, fodder, insemination, etc.).

3. Extensive livestock farming: sluggish production coupled with collection below requirements

Algeria's dairy regions are located in the north, on the coast and inland plains. Dairy cattle production has not expanded due to its dependence on fodder production and the cereal/forage cropping system. Cattle numbers varied over the period (1990-2021), with a decline the period (1990-1997) from 1,392,700 head to 1,255.410

head, mainly due to the drought experienced by the country during this period, to culling carried out as several cases of contagious disease were reported, and to farmers abandoning milk production in favor of more remunerative speculations, given that meat prices are more attractive than milk prices (Debeche, 2006) and (Cherfaoui, 2003). Amellal (1995) also points out that some farmers who are supposed to be mainly dairy farmers are even anticipating the culling of part of their herd in view of the favorable trend in meat prices on the market.

In 2021, the cattle herd is estimated at 1,732,964 head, a drop of 416,585 head in the space of seven years. Over the period 2008-2013, the number of dairy cows grew by 18%. This trend will soon be reversed, as the number of cattle has been declining since 2017, reaching 1,732,964 head in 2021, a loss of 7,219 head compared with 2020. Dairy cows account for 52% of total cattle.

The country has a wide variety of livestock production systems, which can be distinguished by their size, level of specialization and level of technical expertise in livestock management, in particular in the management of feed resources. For this reason, three main production systems have been identified: intensive, semi-intensive and extensive. The latter is the most widespread in the country, and involves local breeds and cross-breeds localized between high-altitude rangelands and lowland areas. Local cattle are located in mountainous regions, their diet is based on grazing, and they transhume between mountainous areas and the foothills. This beef production system plays an important role in the family and national economy. It holds around 700,000 cows, with an average herd size per household of 5 to 6 head. It is concentrated in forest and mountain areas (Yakhlef, 1989). Oriented towards meat production (78% of national production), it also accounts for 40% of national

milk production (Nedjraoui, 2000). Local cattle breeds are mainly found in areas inaccessible to imported breeds, such as the mountains and forests of the Tell, and are kept in extensive sylvo-pastoral systems. More than half of the population is located in the north-east of the country. (Yahiaoui S, 2008).

Table 01: Trends in dairy herd, production and milk collection over the period (2000-2021)

Years	2000	2009	2015	2016	2017	2018	2019	2020	2021
Cattle herd (head)	1 595 380	1 682 433	2 149 549	2 081 306	1 895 126	1 816 280	1 780 591	1 740 183	1 732 964
Of which dairy cows (head)	997 060	882 282	1 107 800	1 066 625	971 663	942 828	927 479	908 412	908 001
Milk production (1000L)	163 4	247 9	375 3	359 701 7	3 521	3 279	3 367	3 405	3 287
Milk collection (1000L)	101	312	972	1066	975	933	—	819	879
Collection rate (%)	6,2	12,6	25,9	29,6	27,7	28,5	—	24	26,8

Source: Author's synthesis based on MADR agricultural statistics

After independence, production went through (03) main periods. The period (1986-1992) was marked by a growth in production (from 750 million liters in 1986 to 1.26 billion liters in 1992) linked much more to the increase in cattle numbers than to their productivity. The period (1993-1997) was marked by a decline and then a trend towards stagnation in production, with a growth rate of less than 4%. This trend persisted until 1996, when production slowly resumed its growth, with the first foundations laid for the national dairy promotion policy in 1995. Bedrani (2008) points out that dairy farmers see milk only as a by-product of meat, which explains the lack of desire to increase milk yields. The period (1998-2013) saw the first results of a program to rehabilitate the sector and the government's decision to import dairy cows, resulting in milk production of 2.3 billion liters in 2006, an 87% increase on the level recorded in 1998. The increase in raw milk production observed in subsequent years, more specifically from 2004 onwards, can be explained by the implementation of incentive measures undertaken through the instructions drawn up within the framework of the PNDA, as well as the increase in cattle numbers through the resumption of imports of pregnant heifers with high dairy potential. National production rose by 54.54% between 2006 and 2015, from 2,200 billion liters in 2006 to 3.4 billion liters in 2015, and production for the 2019/2020 campaign has reached 3.4 billion liters of milk. Year 2021 achieved a cumulative 3.29 billion liters, of which 879,637 million liters were collected. Compared with fiscal 2020, milk production fell by 3%, while milk collection rose by 7%. (MADR, 2021) Nevertheless, these figures achieved over the years have required substantial financial mobilization, as the dairy sector accounts for the bulk of subsidies granted to the agricultural sector.

In Africa, it is more difficult to estimate milk production than in industrialized countries, for at least three reasons: Milk production

involves a greater variety of animal species; milk is mainly valued through self-consumption and local sales (milk collection by industries provides better knowledge of volumes produced); the statistical apparatus is less organized (Chatellier, 2020). Indeed, (Kheffache and Bedrani, 2012) stresses that the method used by official services to estimate the numbers is inadequate for several reasons: Screening and vaccinations are not carried out regularly and systematically. The veterinary services are poorly organized and breeders are reluctant to comply. What's more, there are no regulations requiring breeders to declare births, nor private or public veterinarians to do so. What's more, there are no regulations obliging these veterinarians to monitor the farms in their area with regard to traceability. It should be noted that, although the official figures announced represent an improvement in local production, this is due to milk productivity which is considered too low by international standards, i.e. an annual average of 3,148 liters per cow. These shortfalls in the production of dairy farming systems compared with existing potential are due to a series of structural and governance problems of various kinds, which tend to diminish the expected gain in production. According to several authors, including Djebbarra (2008) and the report presented by Agroligne (2014), these production shortfalls in dairy farming systems are due to the following main constraints:

- Low fodder production and the high cost of concentrated feed due to low rainfall, and irrigated areas are reserved for market gardening, which is considered more profitable;
- Insufficient mastery of the technical management of livestock farms due to the disorganization of the farming profession and extension activities that do not meet farmers' expectations;

- Inadequate collection infrastructure;
- The cost price is higher than the administered price set by the Algerian government, despite the financial aid allocated to breeders in the form of subsidies;
- After withdrawing from the management of the agricultural production sphere, the State sought to fill this void by creating a legal framework for the development of the associative movement. Indeed, chambers of agriculture were created in 1991 to consolidate collective action by encouraging farmers to organize themselves into professional associations. The limited impact of these organizations did not convince farmers, who remained on the bangs of the associative movement.

Raw milk collection is the main link between production and the dairy industry. Until 1995, this activity was carried out by the former units of the state-owned group (Giplait), and experienced strong growth during the period (1990-96) as a result of the rise in raw milk prices from 7DA to 22DA per liter. Subsequently, the partial abandonment of the collection activity in favor of private collectors organized around mini-dairies led to a decline in collection over the period (1996-99), due to the lack of consensus on the transfer price of raw milk. It was only in 2001, with the launch of the NADP, that collection began to attract renewed interest, reaching almost 700 million liters in 2012, following incentives and aid for the opening of new collection centers and an increase in the collection premium. An increase in raw milk collection has been observed over the 1969/2021 period. However, it remains very low in relation to consumption needs and availability. Boukella (1996) states that

during the 1970s, the quantity of milk collected represented 30 to 40% of the total cow's milk produced. This rate then fell to 16% during the period 1980-1990, despite real growth in production during this second period. The quantities of milk produced and collected are destined for processors, of which there are 165 dairies (including 150 private and 15 subsidiaries of the Giplait group), as well as creameries for direct sale to consumers (Agroligne, 2014). The problems encountered in setting up a milk collection and transport system are essentially linked to the small quantities of milk produced per farm and the latter's remoteness from production sites. In addition, milk production is seasonal and transport infrastructures are inadequately equipped. There are also technical constraints such as the lack of technology and know-how in milk collection, the poor quality of the raw milk collected and problems with cooling facilities. Milk produced on the farm is frequently consumed on the farm, delivered to small dairies, or sold raw or processed to consumers. This explains the low proportion of locally-produced raw milk used in processing.

4. Consumption up, prices under pressure: The impact of subsidies on the Algerian dairy market

The government's decision to keep food prices low for an extended period led to a structural imbalance between local supply and demand. Demand has continued to rise, supported by a still considerable population growth and a food purchasing power strengthened by these low prices, particularly for heavily subsidized staples such as milk. Average daily per capita consumption has risen from 1577 kilocalories in the early 1960s to 3349 kilocalories today. For many years, milk has been the main source of animal protein, accounting for 16% of average daily protein intake, far more than

other animal products supplied by the public authorities. (Daoudi and Bouzid, 2020)

Annual consumption of milk and dairy products in kilograms per person has risen considerably. In 1963, Algerian annual consumption was 35 kg/capita (Bedrani and Bouaita, 1998), rising to 61 Kg/capita in 1979-80 (ONS) against 157 kg/capita in 2016 (MADR, 2018). This significant consumption stems from the place occupied by milk in the Algerian citizen's food consumption pattern, the latter having been accentuated with the introduction of financial aid policies to offset the lack of animal proteins noted at the country's independence. The social subsidy policy implemented by the Algerian government, which allocates around 15 billion dinars each year, stimulates this high level of consumption (Beghoul et al, 2010). With 157kg of milk consumed per year, Algerian consumers far exceed the standards recommended by the WHO (90 L/capita/year) (Agroligne, 2014). This places Algeria at the top of the Maghreb region in terms of milk and milk derivatives consumption. Milk consumption levels are well above those of other countries in the region: the quantities of milk available per person per year were 121 kg in 2017, compared with just 52 kg in Morocco, 38 kg in Egypt and Jordan, and 111 kg in Tunisia. (DAOUDI AND BOUZID, 2020). This is reflected in household spending. In 2011, food still accounted for a significant share of the Algerian budget, averaging 42% (compared with 35% in Tunisia in 2005 and 17% in France in 2011). There are disparities between the well-off classes (28%) and the poor classes (54%). According to the ONS (2013), food expenditure was estimated at 1875 billion DA, equivalent to 48,650 DA per capita (Rastoin and El Hassan 2014). It should be emphasized that three explanatory factors are driving an increase in demand for milk, namely population growth and a population structure where the young element predominates, with almost 60%

of people under the age of 20. Added to this is the rate of urbanization, which has risen sharply in recent years to over 55% (Bourbia, 1998). The third factor determining the level of demand is of a socio-economic nature, namely the freeze on the consumer price of pasteurized milk

According to Bencherif (2001), the price of raw milk to farmers was stable between 1986 and 1990, while the prices of production components rose as a result of their liberalization and the devaluation of the dinar. It is clear that the state subsidy for the years 1987 to 1994, which corresponds to the disparity between the price of milk to producers and that of pasteurized milk sales, is considerable and covered by the price compensation fund. Thanks to this policy, the demand for milk and dairy products became even more cross-subsidized. From 1995 onwards, the state gradually withdrew its involvement, regulating the price peaks of imported milk powder by raising the selling price of pasteurized milk in bags to 20 DA/liter, then to 25 DA/liter in 2001.

The State, through the National Interprofessionnal office of milk and dairy products (ONIL) created by Executive Decree no. 97 - 247 of July 08, 1997, began operating effectively in September 2007. It is a Public Industrial and Commercial Establishment (EPIC) under the supervision of the Ministry of Agriculture and Rural Development. The national milk market is regulated by the Office, which is known to the general public as a supplier of subsidized imported dairy raw materials to dairies. In fact, the Office serves 105 private dairies and 15 public dairies belonging to the GIPLAIT group, representing a total of 120 dairies across the country. The Office's relationship with these dairies is embodied in a specific ONIL-dairy agreement, which forms part of the implementation of the national milk market regulation system. These milk factories

benefit from subsidized imported dairy raw materials (milk powder, anhydrous milk fat (AMF)), which are used exclusively to manufacture semi-skimmed milk (15 g fat per liter), pasteurized and packed in polyethylene bags. This milk is marketed at an administered price of 25 DA per liter, on condition that these plants join the scheme to intensify and develop milk production, collect local raw milk and integrate it into the industrial circuit. ONIL is also a key player in the management of public subsidies and its participation in the State's support scheme for the dairy industry, benefiting all players in the sector (breeders, collectors and processors). These subsidies include premiums to support milk production for dairy farmers (14 Da/liter), collection premiums for collectors (05 Da/liter) and premiums to encourage dairies to integrate locally-produced raw milk into the production of pasteurized fluid milk (04 or 06 Da/liter). As this payment system is currently decentralized to the wilayas (DSA), the Office is still responsible for the a posteriori control of these state subsidies

According to ONIL, the government invested 12Da billion in the support system for the dairy sector in 2009. Milk premiums, it adds, amounted to DA6.5 billion. This share will be increased as the milk powder import bill falls. In 2012, subsidies totaled 46Da billion, divided between support for the import of processed milk powder (31.6Da billion, or 68.7% of the total). Which is intended for processors (dairies) to produce only LPS pasteurized milk, and the development of national raw milk production through various subsidies offered to key stakeholders in the local dairy production sector (14.4Da billion, or 31.3% of the total)

The aim of agreements between dairy farmers and dairy collectors is to stabilize transactions in the industry. As a general rule, these contracts include obligations concerning: production quantities, the

duration of the contract, payment terms, the characteristics of the milk delivered, the precise terms for determining the price, and the terms for revising and terminating the contract respectively. At the same time, these dairies must intervene with farms to encourage production and offer them financial, technical and material assistance (Sahali, 2022). The granting of the subsidy was precisely the solution to this problem of cost and the attractiveness of the sector in relation to other agricultural activities. The aim was to eliminate the comparative advantage of milk powder and encourage dairies to collect and add value to local milk. In addition, it plays a regulatory and supervisory role, imposing rules and methods for marketing and distribution. However, private and public operators are simply waiting for the benefits and subsidies. In this situation, there is a real asymmetry and not logical relations to establish normal and sustainable contractual relationships (Lazereg M and Brabez F, 2019).

5. The hidden face of dairy consumption in Algeria: Import dependency and challenges

Until 1974, the Algerian dairy industry operated based on imported bulk milk mixed with locally collected milk. The dairy industry was driven to recombine imported milk powder by the high cost of transporting fresh milk and the attractive price of milk powder (Bencharif, 2001). Algeria is Africa's leading importer of agricultural goods. Due to drought, harvests are often poor, leading to the import of agricultural products to meet the needs of Algerian consumers (Berry, 2011). The country's financial ease has led to a significant increase in food imports. According to Bedrani (2008), this increase in imports by value is accompanied by a rise in imports by volume for the main food products. Imports reached \$39 billion

in 2022, compared with \$37.7 billion in 2021, an increase of 3.4%. Three groups account for 74% of imported goods, including food products, which will account for 27.8% of total imports in 2022, representing a value of \$10.9 billion (ONS, 2023). Algeria is the leading importer of food products on the African continent. This is due to a high level of external dependence: 100% for sugar, 95% for oil, 85% for pulses, 70% for cereals and 57% for milk (Ubifrance, 2012). More than half of milk and dairy product consumption is imported. Imports thus play an essential role in regulating the national market, giving the international milk market a significant influence on the operation of the various sectors of the national dairy industry. This dependence is explained, as mentioned above, by the low contribution of national production to the dairy industry. National milk powder requirements are imported by the National Interprofessional Milk and dairy products Office (ONIL), but also by factories (for example, in 2021, ONIL imported 46% of national milk powder requirements, while private factories imported the rest) (Mendaci, 2023). The latter are legally obliged to collect raw milk in order to benefit from subsidized milk powder. Looking at the figures for imports of both whole and skimmed milk powder, we see that despite the instability of the world milk powder market and sporadic price variations, Algerian imports have been growing year on year. This heavy dependence on the outside world has been confirmed in recent years, with Algeria importing around 17% of the world milk powder market over the last five years.

In 2007, the rise in world market prices for agricultural and agri-food products, particularly dairy products, led to an increase in the import bill (Madelin and al, 2007), with milk imports amounting to \$1,290 million in 2008. Despite Algeria's oil revenues, which help finance import spending, the instability of oil prices on the international market and the limited horizon of these revenues

jeopardize the country's long-term socio-economic stability. In response, the Algerian government has reassessed its policy of structuring and supporting local milk production (Mamine and al, 2021). Following a statistical observation of the world milk powder market over an average or long period, it is possible to observe that the milk crisis has become cyclical with a period of amplitude of 6 to 7 years: 1995/1996, 2001-2007 and 2014.

6. Discussion of results: Between ambitious dairy policy promises, results, and obstacles on the ground.

The weakest link in the milk chain lies upstream, and particularly in the link between producer and factory. Unlike Tunisia and Morocco, the state intervenes both to regulate sales prices and to subsidize productive investment by breeders, collectors, collection centers and processors, as well as to import milk powder; If we compare the organizations set up for primary production, we can see that non-performing countries are not essentially based on cooperative organizations.

The dairy cattle herd has grown by a modest 8.6% since 2000, reaching 1,732,964 head in 2021, of which 52.4% are dairy cows. This improvement is the result of genetic improvement programs involving the import of pregnant heifers with high genetic improvement potential, carried out as part of policies to develop and support the dairy industry. In fact, the growth seen in local production over more than fifty years, and particularly over the last two decades, is not the result of improved production and productivity per cow, but rather of an increase in dairy cattle numbers driven by imports. In this sense, we can safely say that we have gone from being an importer of milk and dairy products to an

importer of heifers and dairy equipment, in addition to anhydrous milk powder. Imports, which have been continuous since independence, have risen from an annual average of 1,671 head during the period 1964- 1968 (Kheffache and Bedrani, 2012) to 5,8043 head during the period 2004-2005 and 93,500 head during the period 2009-2012 (ONFAA, 2014). They fell to 27,400 during the period 2012- 2015. In total, around 487,921 cows were imported between 1964 and 2015 (Bellil and Boukrif, 2021). Local milk production remains low, given the genetic potential of the BLM in particular, and the scale of demand. Moreover, this development has not kept pace with that of processing capacity in the industry, and is considered to be the direct result, according to Kali et al (2011), of the increase in cattle numbers through the import of pregnant heifers from 2004, the gradual improvement in production techniques and the efforts of certain breeders to improve product quality.

Milk production and collection seem to have gone through two eras. The period prior to 2015 was marked by steady growth, thanks to the impetus of private players and support from the State. This increase was not due solely to improved productivity of farming systems, and even less to a marked improvement in the national raw milk collection rate. Rather, it is the result of an increase in the premium paid to basic players from 2009 onwards, complemented by an increase in the number of new players in the sector joining the ONIL scheme. As for the recession observed in 2015, it can be attributed to two different but mutually complementary phenomena: On the one hand, high production expenses on livestock farms, exacerbated by the drought experienced by the country, are leading to a neglect of the business. On the other hand, the abolition of milk quotas in Europe has led to a sharp drop in prices on the world powder market. As far as processing is concerned, this drop in prices

favors powder to the detriment of local milk, prompting dairies to source milk on the international market. (Lazreg and al, 2020)

During the period 1999-2001, there was little variability in raw milk collection, with private producers and collectors generally preferring to sell raw milk for direct consumption and to small-scale artisans at a price of between 35 and 40 DA per liter. Ferrah (2006) confirms this trend, estimating that production costs per liter of cow's milk have risen rapidly. From 2001 onwards, there was renewed interest in milk collection, following incentives and subsidies for the opening of new collection centers and an increase in the collection premium. In 2016, milk collection stood at around one billion liters, an unprecedented level, due to the rise in the price of imported milk powder. This situation is set to continue, with milk collection reaching 879 million liters by 2021. It should be noted, however, that the low collection rate, corresponding to the share of milk collected in the total quantities of raw milk produced, did not exceed 13% over the two decades (1990-2008), recording an average collection rate of 8% during the period (2000-2008). This rate has risen over the last decade, reaching 30% in 2016, and recording an average collection rate of around 27% for the period (2015-2021). The low collection rate, as suggested by Amellal (1995), is explained by the poor organization of the collection circuit, aggravated by the wide dispersion of farms in most regions, where the quantity of milk collected per kilometer is very often low. Milk produced on the farm is frequently consumed on the farm, delivered to small dairies, or sold raw or processed to consumers. This explains the low proportion of locally-produced raw milk used in processing. Over the last few decades (2000-2020), the integration rate has been between 10-15%. This rate of integration has fallen sharply compared with the early years of independence, when it was around 70% between 1963 and 1970.

Despite considerable levels of growth in milk production in Algeria, it remains below the still high population growth rate, covering just 56% of national needs in milk and dairy products, in contrast to neighboring Morocco, where the coverage rate is 96%, with definite room for improvement. This performance is the result of the adoption of an aggregation model based around collection centers, enabling the integration of milk collected by the processing industry, as well as the modernization of production methods, enabling yield levels comparable to those of large European farms to be achieved. Similarly, Tunisia has achieved self-sufficiency in milk and milk derivatives, with slight surpluses. It should be noted that 60% of dairy cattle are purebred Holsteins, with the remaining 40% being local breeds, and that dairy imports will not exceed 2.5% in 2020 (National Observatory of Agriculture). As a result, the dairy industry has remained heavily dependent on the world market, with the dairy processing industry operating almost exclusively with imported milk powder. However, neighboring countries import at lower levels, namely 11% in Tunisia and 29% in Morocco, and rely more on local supplies (FELLAH-TRADE).

Recourse to imports for the acquisition of dairy livestock remains unavoidable, given the absence of a genetic nucleus and the lack of heifer nurseries capable of producing such a large number of female producers. It is therefore necessary to study the possibility of attracting investment for the creation of these farms through partnerships between local and foreign investors. However, the importation of heifers is increased by observes a decrease in the herd by the disappearance of the existing herd, following early slaughter, which creates a dependence on the market (According to ITLV, 43% of the imported population is killed after three lactations), and this due to the attractiveness of meat prices, which leads to a decrease in the subsidy of imported heifers (about 27,400 heifers per year

between 2012 and 2015 (NEKKAB, 2016). due to the country's crisis and the reconversion of breeders to fattening, which does not guarantee the long-term financial sustainability of this policy of subsidizing the acquisition of heifers

In its current state and according to the results observed, the subsidy mechanism does not encourage the development of the local sector. Other speculations attract farms with production factors due to milk's low profit margin. What's more, applying the subsidy uniformly to all farmers (whatever their size, profile and access to production factors) and unanimously throughout the country represents a loss and a source of "waste", particularly in this period of crisis and reduced resources. It would be highly advisable to set up a system for selecting breeders to be subsidized, and to split subsidies into variable subsidy tranches in order to encourage a dynamic development incentive.

7. Conclusion

State policy, aimed at encouraging local production and collection, has been influenced by the growing importance attached to food security and the budgetary cost of imports. All the decisions taken concerning dairy policy represent a constrained yet judicious compromise: the State must meet the basic needs of the population, take advantage of the comparative advantage of the overall cost, which has been volatile in recent years, encourage local production and collection with the aim of ensuring food security, encourage territorial development and preserve jobs in rural areas.

According to official figures, the contribution of previous development programs as a whole, aimed at effectively increasing milk production, is showing positive results. In fact, between 2000 and 2020 (the period of implementation of the new national dairy policy), local milk production, whose growth is the primary objective of this policy, almost doubled (101%). Indeed, it has risen from 1.634 billion liters in 2000 to 3.287 billion liters in 2021 (MADR, 2021); raw milk collection has increased eightfold compared with its initial 2000 value (870%). Both these developments are positive and important, but they coexist with subsidized imports of powdered milk (both whole and skimmed).

Although world markets are currently in favor of importing countries, we must not overlook opportunities for a turnaround in the future. Climate, the global economic situation and political crises are having a considerable impact on dairy markets. The resumption of international growth, particularly in China, will trigger a new dynamic of demand growth, which could influence prices on milk markets. In addition, areas producing raw materials imported from Algeria are not exempt from climatic events likely to disrupt overall supply levels. Finally, political crises could undermine the country's

ability to negotiate supplies, particularly of cereals and dairy products, with its main traditional allies (such as France and the EU). These factors contribute to the need to make the cost of food sustainable and in line with the State's financial resources, by adjusting the ratio between domestic supply and the use of international markets (Bessaoud and al. 2019). The option of importing milk powder rather than local milk made sense as long as world tariffs remained low and was based on an exclusively industrial strategy. However, the effects of this strategy are now being felt. The "importing" strategies implemented by the authorities resembled more food policies designed to "feed the population", and therefore "food", than policies aimed at developing a promising sector. These strategies influenced the rate with its initial 2000 value (870%). Both these developments are positive and important, but they coexist with subsidized imports of powdered milk (both whole and skimmed).

Although world markets are currently in favor of importing countries, we must not overlook opportunities for a turnaround in the future. Climate, the global economic situation and political crises are having a considerable impact on dairy markets. The resumption of international growth, particularly in China, will trigger a new dynamic of demand growth, which could influence prices on milk markets. In addition, areas producing raw materials imported from Algeria are not exempt from climatic events likely to disrupt overall supply levels. Finally, political crises could undermine the country's ability to negotiate supplies, particularly of cereals and dairy products, with its main traditional allies (such as France and the EU). These factors contribute to the need to make the cost of food sustainable and in line with the State's financial resources, by adjusting the ratio between domestic supply and the use of international markets (Bessaoud and al. 2019). The option of

importing milk powder rather than local milk made sense as long as world tariffs remained low and was based on an exclusively industrial strategy. However, the effects of this strategy are now being felt. The "importing" strategies implemented by the authorities resembled more food policies designed to "feed the population", and therefore "food", than policies aimed at developing a promising sector. These strategies influenced the rate of consumption, which rose remarkably, to the detriment of production, which remained constantly restricted due to a lack of competitiveness. This led to a complete detachment between production and consumption, resulting in a strong extraversion of the sector. This strategy, which is also based on support for players in the production chain, has relied on the industrial network to guarantee the collection of milk of controlled sanitary quality. It should be noted that, despite this success, a significant proportion of production (around 38%) is not directed towards the industry, but is sold via the informal network.

In modern dairy farming, the import of pregnant heifers is indispensable, entailing foreign currency expenditure. What's more, its effectiveness in increasing milk production is not sufficient, according to the results reported. Instead of financing the import of heifers with high milk production capacity, it would probably be wiser to consider providing assistance to promote their local breeding. This would boost the foreign exchange economy and stimulate job creation. However, we must ask ourselves whether this approach is feasible, given the lack of fodder in Algeria, which is frequently cited as one of the factors hindering progress in dairy farming. This indicates that the cost structure of milk production is affected by feed costs, which account for at least 80% of total costs.

References :

Amellal R. (1995), La filière lait en Algérie : entre l'objectif de la sécurité alimentaire et la réalité de la dépendance, In Allaya M. (ed.). Les agricultures maghrébines à l'aube de l'an 2000. Montpellier : CIHEAM, (Options Méditerranéennes : Série B. Etudes et Recherches ; n. 14, P.p 229-238

Agroligne (2014), Dossier : *Un marché mondial de quoi aiguiser les appétits*. In Agroligne n.90, Mai-Juin 2014.

Bedrani, S. (2008), L'agriculture, l'agroalimentaire, la pêche et le développement rural en Algérie, In Allaya M. (ed.). Les agricultures méditerranéennes : analyses par pays. Options Méditerranéennes : Série B. Etudes et Recherches ; n. 61. P.p 37-73

Bedrani, S., Bouaita, S. (1998), Consommation et production du lait en Algérie : Eléments de bilan et perspectives. Cahiers du CREAD, n.44. P.p. 45-70

Beghou, S., Abdeldjalil, M.C., Bensegueni, A. & Messai, A. (2010), Filière lait en Algérie : état des lieux et perspectives. In 8èmes journées des sciences vétérinaires « La filière lait en Algérie : un défis à relever ». ENSV le 18-19 avril 2010.

Bellil, K. Boukrif, M. (2021), Les réformes de la filière lait en Algérie : bilan et perspectives, les cahiers du cread, Vol. 37 - n° 02. P.p 129-157

Bencharif A. (2001). Stratégies des acteurs de la filière lait en Algérie : états des lieux et problématiques. In : Padilla M. (ed.), Ben Saïd T. (ed.), Hassainya J. (ed.), Le Grusse P. (ed.). Les filières et marchés du lait et dérivés en Méditerranée : état des lieux, problématique et méthodologie pour la recherche. Montpellier :

CIHEAM. Options Méditerranéennes : Série B. Etudes et Recherches; n. 32. P.p. 25-45

Bessaoud, O. Pellissier, J. Rolland, J. Khechimi, W. (2019). Rapport de synthèse sur l'agriculture en Algérie, PROJET D'APPUI A L'INITIATIVE ENPARD MEDITERRANEE, CIHEAM.

Berry, B. (2011), Agroalimentaire, Rapport sur le passé, le présent et l'avenir –Algérie. Agriculture et Agrolimentaire, Canada.

Boukella, M. (1996), Les industries agro-alimentaires en Algérie : politiques, structures et performances depuis l'indépendance. In : Boukella M. (ed.). Les industries agro-alimentaires en Algérie : politiques, structures et performances depuis l'indépendance. Montpellier : CIHEAM, p. 1- 67 (Cahiers Options Méditerranéennes; n. 19). P.p 1-67

Boukella, M. (1998), Restructuration industrielle et développement : Le cas des industries agroalimentaires en Algérie. Les cahiers du CREAD ; n.45. P.p 50-72

Boukella, M. (2008), Politiques agricoles, dépendance et sécurité alimentaire. Bureau FRIEDRICH EBERT, P.p 10.24

Bourbia, A. (1998). L'approvisionnement alimentaire urbain dans une économie en transition : le cas de la distribution du lait et des produits laitiers de l'ORLAC dans la ville d'Alger. Master of science, IAMM, Montpellier.

CACI., (2004). Rapport de présentation du secteur agroalimentaire en Algérie. Chambre Algérienne de Commerce et d'Industrie.

Chatellier, V. (2020), La dépendance de l'Afrique de l'Ouest aux importations de produits laitiers, INRAE Productions Animales, Vol. 33 No 2, P.p 125-140

Chemma, N. (2017), La problématique de la sécurité alimentaire en Algérie: une méta analyse du secteur laitier, Revue les cahiers du POIDEX N°07, P.p 43-61

Cherfaoui, A., (2003). Essai de diagnostic stratégique d'une entreprise publique en phase de transition le cas de la LFB (Algérie). Master of science n°62, IAM-Montpellier.

Daoudi, A. Bouzid, A. (2020). La sécurité alimentaire de l'Algérie à l'épreuve de la pandémie de la covid 19, Les Cahiers du Cread -Vol. 36 - n° 03, P.p 187-207

Debeche, E. (2006). Contribution à l'étude de l'élevage bovin laitier en milieu semi-aride. Cas de la wilaya de M'sila. Mémoire d'Ingéniorat, INA-Alger.

Djebbarra, M. (2008). *Durabilité et politique de l'élevage en Algérie. Le cas du bovin laitier*. In Actes du colloque international « Développement durable des productions animales : enjeux, évaluation et perspectives ». Alger, 20-21 Avril 2008.

FELLAH_TRADE, Le portail agricole du crédit agricole du Maroc, Aperçu de la filière lait Maroc, , <https://www.fellah-trade.com/fr/infos-agricoles/filiere-animale/chiffres-cles-lait> (consulté le 23/12/2024)

Ferrah, A. (2006). Aides publique et développement de l'élevage en Algérie. Contribution à une analyse d'impact (200-2005). Cabinet GREEDAL.COM.

Hales, N (2022). Dairy and Products Annual –Algeria-, United States department of agriculture

Kali, S. Benidir, M. Ait Kaci, K. Belkheir, B. Benyoucef, MT. (2011). Situation de la filière lait en Algérie : Approche analytique

d'amont en aval. In Livestock Research for Rural Development; n. 23, vol. 8.

Kheffache, H. Bedrani, S. (2012), Les importations subventionnées de génisses à haut potentiel laitier : un échec du a l'absence de politique laitière globale. Les cahiers du CREAD, vol 101, P.p 123-153

Lazreg, M. Bellil, K. Djediane, M. Zaidi, Y. (2020), La filière lait algérienne face aux conséquences de la pandémie de la covid 19, Les Cahiers du Cread -Vol. 36 - n° 03

Lebiad, B. Nejari, B. Bouri, A. (2017), Les facteurs associés à la décision d'achat et la consommation du lait de vache chez les adultes de la ville de kénitra (Maroc), Annales des Sciences de la Santé, N° 11, Vol. 1, P.p 28-37

MAAP, (2009). *Les politiques agricoles à travers le monde : quelques exemples (l'Algérie)*. Document du Ministère de l'alimentation, de l'agriculture et de la pêche de France

Madelin V., Hébrard L., Scees B. (2007). La flambée des prix des produits laitiers industriels se répercute tardivement sur le prix de lait de vache à la production. Agreste

MADR, (2002). *Le plan national de développement agricole et rural : Présentation synthétique*. Document du Ministère de l'Agriculture et du Développement Rural, Algérie.

MADR, (2018). Statistiques agricoles superficies et productions, série B

MADR, (2021). LA PRODUCTION AGRICOLE Campagne 2020/2021

Mamine, F. Fares, M. Duteurtre, G. Madani, T. (2021). Régulation du secteur laitier en Algérie entre sécurité alimentaire et développement d'une production locale : synthèse, P.p 73-81

Mendaci, M. (2023), l'industrie laitière en Algérie.
<https://www.bevalg.com/fr/articles/58>

Nedjraoui, D. (2000). Profil fourrager Algérie. (Document PDF disponible online)
<http://www.fao.org/ag/AGP/AGPC/doc/Counprof/Algeria/Algerie.htm> (consulté le 10-01 -2025).

Observatoire national de l'agriculture (2020), Indicateurs clés des filières agricoles en Tunisie 2020,
<http://www.onagri.tn/uploads/publications-thematiques/INDICATEURS-FF.pdf> (consulté le 24/12/2024)

ONFAA. (2014). *Le commerce international du lait. Note de conjoncture n.01*. Observatoire Algérien des filières agricoles et agroalimentaires.

ONS, (2013). Rétrospectives statistiques (1962-2011).
<https://www.ons.dz/IMG/pdf/agric07-11-2-2.pdf> (consulté le 22/11/2024)

ONS, (2023). Echanges extérieures (2017.2022),
https://www.ons.dz/IMG/pdf/c.echanges_ext2017_2022.pdf (consulté le 20/01/2025)

Rastoin, J.L et El Hassan, B. (2014). Céréales et oléo protéagineux au Maghreb : Pour un co-développement de filières territorialisées. Collection Construire la Méditerranée. Institut de Prospective Economique du Monde Méditerranéen (IPEMED).

Sahali, N. (2021). Le développement récent du secteur agricole en Algérie à travers l'analyse des filières stratégiques : céréaliculture et lait. Revue algérienne de la sécurité et développement Volume: 10 / N°:03 / P.p 1083-1097

Souidi, Z. et Bessaoud, O. (2011). Valorisation des espaces ruraux en Algérie : une nouvelle stratégie participative. Revue New.Medit, n. 01. P.p 17.24

UBIFRANCE (2012). La filière agroalimentaire en Algérie : fiche de synthèse. Mission économique. UBIFRANCE en Algérie.

Yahiaoui, S. (2008), diaporama des élevages bovins de population locale, MADR

Yakhlef., H. (1989). La production extensive du lait en Algérie. In : Tisserand J.-L. (ed.). Le lait dans la région méditerranéenne. Options Méditerranéennes : Série A. Séminaires Méditerranéens ; n. 6, Paris : CIHEAM, P.p 135-139