

The Contribution of the Agricultural Sector to Promoting Non-Hydrocarbon Exports in Algeria: An Analytical Study During the Period (2016–2024)

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ABSTRACT

This study aims to analyze the contribution of the agricultural sector to promoting non-hydrocarbon exports in Algeria during the period (2016–2024). It examines the sector's potential, performance in GDP and employment, and the evolution of agricultural exports and the agricultural trade balance. The findings reveal that despite significant natural and human resources, the sector's contribution to exports remains limited due to structural and organizational constraints. The study also highlights the persistent deficit in the agricultural trade balance, reflecting weak productive and export capacities. Based on these findings, the study recommends modernizing the agricultural sector, enhancing investment, improving product quality, and developing marketing and export systems to support economic diversification.

Keywords: Agricultural sector, Agricultural exports, , Agricultural trade balance.

Introduction

The agricultural sector constitutes one of the fundamental pillars of the Algerian economy due to its vital role in achieving food security, providing employment opportunities, and contributing to the diversification of income sources outside the hydrocarbon sector. In light of the economic challenges facing Algeria, particularly fluctuations in oil prices, it has become necessary to strengthen the role of alternative productive sectors, foremost among them the agricultural sector, enabling it to contribute effectively to supporting non-hydrocarbon exports and achieving sustainable development.

Despite Algeria's considerable natural and human resources, as well as the reform programs and support policies adopted by the state to promote the agricultural sector, the contribution of this sector to total exports remains limited. The sector also suffers from several structural and organizational imbalances that affect its performance and competitiveness in international markets. In light of the above, this research seeks to address the following main problem:

To what extent has the agricultural sector contributed to the promotion of non-hydrocarbon exports in Algeria during the period (2016–2024)?

To analyze this problem, the following sub-questions can be raised:

1. What is the current state of the agricultural sector in Algeria in terms of resources, production, and potential?
2. To what extent does the agricultural sector contribute to GDP and employment?
3. How have agricultural exports evolved, and what is their role in non-hydrocarbon exports?

4. What are the main challenges hindering the development of agricultural exports in Algeria?

To answer the main research problem, the study was divided into the following main sections:

1. The reality of the agricultural sector in Algeria
2. The contribution of the agricultural sector to the Algerian national economy
3. The contribution of the agricultural sector to promoting non-hydrocarbon exports

1. The Reality of the Agricultural Sector in Algeria

The agricultural sector is considered one of the most important strategic sectors for economic development in Algeria, given the country's agricultural qualifications and its natural, human, and economic potential that enable it to achieve these objectives. These resources and capabilities are represented as follows:

1.1 Resources and Potentials

Algeria possesses several natural resources and capabilities that can support the development of the agricultural sector and achieve self-sufficiency, which is the primary objective of the agricultural policy pursued in the country. Furthermore, this sector contributes to diversifying the national economy and strengthening sources of income. Algeria has numerous agricultural qualifications and natural, human, and economic resources that qualify it to achieve these goals and even generate surpluses in certain agricultural products.

1.1.1 Water Resources

Water resources in Algeria can be classified into three main categories:

a. Rainwater Resources:

Despite Algeria's vast area of approximately 2.4 million km², 93% of this area lies in the High Plateaus and southern regions, where rainfall represents only about 8%. The northern region, which represents 7% of the country's total area, enjoys a Mediterranean climate and receives approximately 192 billion cubic meters of rainfall, accounting for 92% of total precipitation.

b. Surface Water Resources:

Surface water resources include dams, reservoirs, and rivers. Surface water resources are estimated between 9.8 and 13.5 billion cubic meters annually. These resources are geographically distributed from north to south and east to west. Mediterranean basins (north) contain about 11.1 billion cubic meters, the High Plateau basins about 1 billion cubic meter, while desert basins contain approximately 0.6 billion cubic meter. Dams represent the second source of water in Algeria after groundwater. In 2009, 66 dams were operated by the National Agency of Dams, with a storage capacity estimated at 7.5 billion cubic meters.

c. Groundwater Resources:

Scientific estimates indicate the existence of 147 aquifers, around 60,000 small wells, 90,000 springs, and 23,000 deep wells. The exploitable quantity of groundwater is estimated at approximately 7 billion cubic meters annually, distributed between the north (2 billion m³/year) and the south (5 billion m³/year).

1.1.2 Land Resources

Algeria covers an area of 238 million hectares, of which approximately 48.1 million hectares are agricultural land, representing 20.21% of the country's total area. However, only 8.6 million hectares are actually exploited, representing 19.5% of total agricultural land, including 1.47 million hectares of irrigated land.

Irrigated areas are supplied with water through artificial methods rather than rainfall. Algeria adopted this technique due to irregular rainfall and in order to increase agricultural productivity and output through agricultural intensification.

Table (1): Distribution and Development of Agricultural Land During the Period (2016–2023)

Unit: 1000 hectares

Years	2016	2017	2018	2019	2020	2021	2022	2023
Arable land	34946.74	43769.9	41358.85	43968.8	41358.85	41316.07	41316.07	41344.70
Utilized agricultural land	8448.48	8534.6	5522.41	5724.78	8509.57	8509.57	8503.62	8571.94
Forests	1971.20	1971.2	1930	4090.99	1949.00	1958.33	1968.11	1977.59
Pastures	32910.65	32798.7	32788.83	32755.97	32841.83	32806.50	32806.50	32807.00

Source: Arab Organization for Agricultural Development, Arab Agricultural Statistics Yearbook.

The data in Table (1) indicate that Algeria possesses a very large arable land area estimated at 41,344 hectares in 2023. Although this represented a slight decline compared to 2017 and 2019, when the area exceeded 43 thousand hectares, it still constitutes a major opportunity for expanding and developing agricultural activities.

However, the actually exploited agricultural area remains limited compared to the total available land. It declined significantly in 2018 to 5,522.41 hectares after reaching 8,534.60 hectares in 2017. In 2020, the exploited area increased again to 8,509.57 hectares, while in the later years of the period it remained relatively stable. This demonstrates that a significant proportion of agricultural land is not effectively utilized in agricultural production despite the availability of resources that could be better employed to support agricultural output and improve productivity under suitable conditions.

As for forests and pasturelands, they occupy substantial areas relative to the country’s total area, reflecting the diversity of agricultural land resources in Algeria.

1.1.3 Human Resources

Agricultural activity in Algeria represents the main source of livelihood for populations living in mountainous regions, estimated at around 7 million inhabitants (17% of the national population), including 3.5 million rural residents. The agricultural sector employs approximately 2.6 million workers, representing more than 74% of the rural workforce and 24% of the national labor force.

Despite this significant workforce, farmers frequently complain about labor shortages, especially in southern regions, where the use of modern machinery remains limited compared to traditional labor methods. It is also worth noting that a large proportion of labor in this sector consists of temporary workers, reflecting the seasonal nature of agricultural activities.

1.1.4 Plant Resources

Plant production represents the primary indicator for measuring the contribution of the agricultural sector to GDP. Consequently, all agricultural policies implemented in Algeria have aimed at increasing and improving plant production.

Among the main crops, cereal production occupies first place, followed by vegetables, citrus fruits, other fruits, industrial crops, vineyards, and legumes.

Table (3): Development of Agricultural Production During the Period (2016–2023)

Unit: Thousand Tons

Years	2016	2017	2018	2019	2020	2021	2022	2023
Cereals	3445.16	3478.07	6065.94	5633.45	4392.30	2783.27	4717.64	4207.28
Wheat	2440.10	2436.50	3981.22	3876.88	3106.00	2168.39	3000.00	3029.36
Vegetables	8880.20	8882.46	9464.27	8775.91	10287.21	10106.68	10021.24	10935.46
Fruits	468.23	5284.20	14634.71	5006.10	4552.00	4728.366	4829.287	5218.49

Source: Arab Organization for Agricultural Development, Arab Agricultural Statistics Yearbook.

It is evident from the table above that among the agricultural crops that experienced exceptional growth during the period (2017–2023) were vegetables, whose production reached 10,935.46 thousand tons in 2023. Vegetable cultivation currently occupies approximately 92,736 hectares, of which 41% is dedicated to potato production. This growth is attributed to improvements in the quality of seeds used, fertilizers applied, and irrigation methods adopted, all of which contributed to increasing vegetable agricultural production.

Fruit production ranked second, recording fluctuating values throughout the period, although production quantities remained relatively significant. The highest quantity reached 5,284.20 thousand tons in 2017. This was followed by cereal and wheat production respectively. It is noticeable that the production levels of both cereals and wheat fluctuated considerably and lacked stability during the period under study. The highest production values for cereals and wheat were recorded in 2018 at 6,065.94 thousand tons and 3,981.22 thousand tons respectively, while the lowest values were registered in 2021 at 2,783.27 thousand tons and 2,168.39 thousand tons respectively. These quantities remain insufficient compared to Algeria’s needs for this essential commodity, as they satisfy no more than one quarter of domestic demand. This situation is mainly due to the irregularity of rainfall upon which Algerian agriculture heavily depends.

2. The Contribution of the Agricultural Sector to the Algerian National Economy

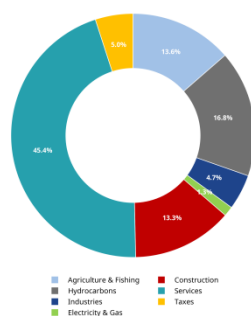
The agricultural sector is considered the primary sector responsible for producing food commodities to satisfy the increasing needs of the population in line with continuous demographic growth. It occupies a leading position in importance among various economic sectors worldwide, particularly in developed countries. Algeria demonstrates the significant importance of this sector in the national economy through its orientation toward searching for developmental alternatives capable of advancing economic development.

Among the most important contributions of this sector are the following:

2.1 Contribution of the Agricultural Sector to Gross Domestic Product (GDP)

Gross Domestic Product (GDP) is considered one of the most prominent macroeconomic indicators in the Algerian national economy. Through it, economic growth rates and the contribution of all economic sectors can be identified.

Figure (1): Contribution of Major Sectors to Algeria’s GDP in 2024



Source: Prepared by the researcher based on the Bank of Algeria report, Economic and Monetary Developments (2020, 2024).

The figure above shows that the agricultural sector ranked third among the sectors contributing to GDP after the services sector and the hydrocarbon sector (extractive industries). Despite Algeria’s heavy dependence on hydrocarbons, the contribution of the agricultural sector to GDP is considered an important indicator through which the country seeks to diversify its economy and strengthen the balance between productive sectors.

In addition, the following table presents the evolution of the agricultural GDP contribution to total GDP during the period (2016–2024), by tracking the added value generated by the sector and its share in GDP.

Table (5): Evolution of the Contribution of Agricultural Output to GDP During the Period (2016–2024)

Unit: Billion Algerian Dinars (DZD)

Years	2016	2017	2018	2019	2020	2021	2022	2023	2024
GDP	17,514.6	18,876.2	20,452.3	20,428.3	20,902.1	25,153.2	32,039.5	33,638.3	35,788.5
Agricultural GDP	2,140.3	2,219.1	2,421.6	2,529.1	2,682.6	2,826.1	3,400.4	4,402.2	4,861.4
Percentage of GDP	12.2%	11.8%	11.8%	12.4%	12.8%	11.2%	10.6%	13.1%	13.6%

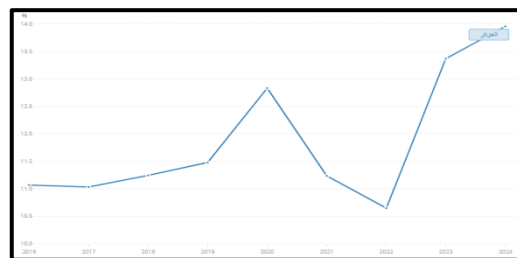
Source: Prepared by the researcher based on the Bank of Algeria report, Economic and Monetary Developments (2020, 2024).

The table clearly shows that the agricultural sector in Algeria achieved significant growth during the period between 2016 and 2024. Its value increased from 2,140.3 billion DZD in 2016 to 4,861.4 billion DZD in 2024. This increase reflects an improvement in the performance of the agricultural sector and is largely attributed to the implementation of national agricultural development plans, agricultural renewal and reform policies, and support programs adopted by the state, particularly the Growth Consolidation Program (2015–2019) and the Roadmap Policies (2020–2024), which established precise objectives for developing production.

These programs and policies aimed to organize the agricultural sector and achieve growth rates that contribute to economic diversification. The results of these reforms became evident between 2022 and 2024 through the accelerated increase in agricultural output.

However, the contribution rates of agricultural output to total GDP remained relatively modest during this period. This is mainly due to the fact that the growth rate of total GDP exceeded the growth rate of agricultural output, in addition to the strong contribution of other sectors, especially the hydrocarbon sector, to total GDP. These contribution rates declined in 2020 and 2021 to 11.2% and 10.6% respectively, compared to the higher percentages recorded during the period 2016–2019. Conversely, 2023 and 2024 recorded a noticeable increase in the contribution rates, reaching 13.1% and 13.6% respectively. This rise can be explained by the acceleration of agricultural production, increased public and private investments, and the growing domestic demand for local agricultural products.

Figure (2): Evolution of Added Value in the Agricultural Sector as a Share of GDP

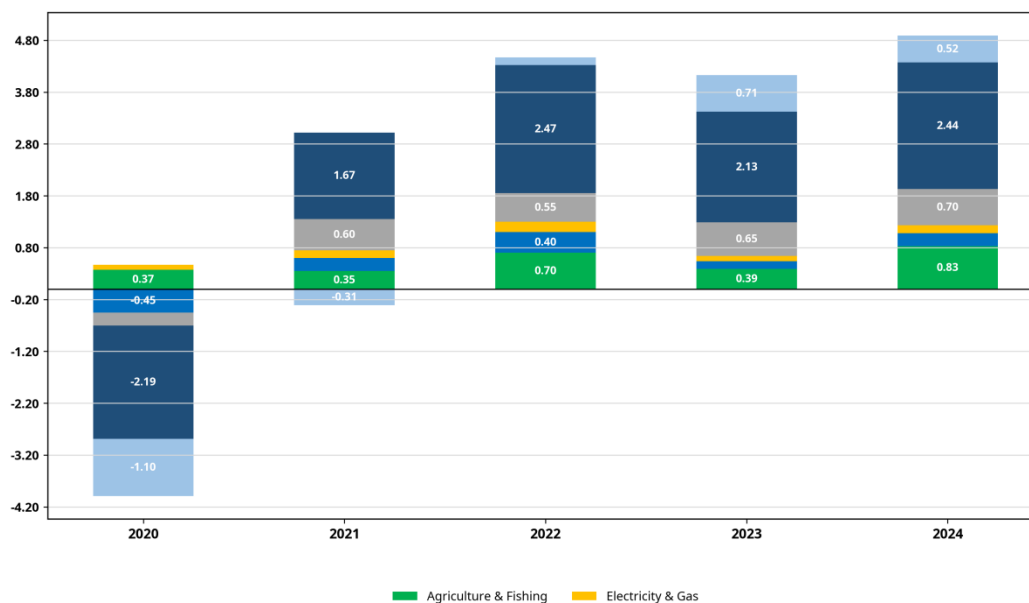


Source: World Bank national accounts data and OECD national accounts data.

2.2 Contribution of the Agricultural Sector and Other Sectors to Non-Hydrocarbon GDP

Climatic conditions and investments in 2024 contributed to improvements in several agricultural branches, thereby strengthening the growth of the agricultural sector. In addition, the services sector, particularly activities related to trade, continued to record strong performance. Furthermore, the stable and positive growth achieved by all other non-hydrocarbon sectors, except industry, contributed to accelerating the growth of non-hydrocarbon GDP, which reached 4.8% in 2024.

Figure (3): Contribution of Major Sectors to Non-Hydrocarbon GDP During the Period (2020–2024)



Source: Annual Report of the Bank of Algeria, Economic and Monetary Developments, 2024, p.125.

The figure shows that the services sector, especially trade-related services, represented the largest contributor to the growth of non-hydrocarbon GDP during the period (2020–2024), recording a growth contribution of 2.44 percentage points in 2024.

The agricultural sector ranked second after the services sector in terms of contribution to non-hydrocarbon GDP growth compared to previous years. It contributed 0.83 percentage points to the growth of non-hydrocarbon GDP, equivalent to 16.33% of total non-hydrocarbon GDP. This improvement is mainly attributed to favorable climatic conditions and investments in several agricultural branches, which enhanced agricultural sector growth. Moreover, the stable and positive growth of all other sectors outside hydrocarbons, with the exception of industry, contributed to accelerating non-hydrocarbon GDP growth, which reached 4.8% in 2024.

2.3 Contribution of the Agricultural Sector to Employment

Despite the considerable number of workers employed in the agricultural sector, farmers continue to complain about labor shortages, especially in southern regions, where the use of modern machinery replacing traditional labor remains limited. It is also noteworthy that a large proportion of workers in this sector are temporary employees, reflecting the seasonal nature of agricultural activities.

The following table illustrates the evolution of labor force participation in the agricultural sector during the period (2016–2023), according to World Bank data.

Table (6): Evolution of Labor Force Participation in the Agricultural Sector During the Period (2016–2023)

Years	2016	2017	2018	2019	2020	2021	2022	2023
Total Labor Force	1,355,562	12,357,590	12,514,356	12,667,017	12,046,917	12,323,177	13,020,342	13,174,228
Total Agricultural Labor Force	10,845	10,859	10,001	11,280	10,320	10,268	9,610	2,700
Percentage of Agricultural Employment	8%	10.16%	10.01%	9.72%	9.88%	9.84%	9.54%	9.33%

Source: World Bank Data.

The table indicates a continuous gradual decline in the percentage of workers employed in the agricultural sector relative to the total labor force in Algeria. The percentage decreased from 10.16% in 2017 to 9.33% in 2023, despite the increase in the total labor force during the same period. This reflects the declining role of agriculture as a source of employment in the national economy.

This decline can be attributed to several factors, including:

- The increasing use of machinery and modern technologies instead of manual labor;
- The movement of workers toward other sectors that provide greater stability and comfort;
- The lack of sufficient financial support from the state;

- The weak pace of agricultural investment;
- Rural migration toward urban areas;
- Climatic effects that negatively impact agricultural productivity.

These challenges highlight the need for the state to adopt effective policies capable of making the agricultural sector more attractive and more capable of absorbing labor, especially in light of the challenges related to food security and rural development.

2.4 Per Capita Agricultural Output

Per capita agricultural GDP is considered an important economic indicator for measuring the effectiveness of the agricultural sector in meeting food needs. It also reflects the relationship between agricultural production and population growth.

The following table presents the evolution of average per capita agricultural GDP and the ratio of per capita agricultural GDP to per capita total GDP.

Table (7): Evolution of Per Capita Agricultural GDP During the Period (2016–2024)

Years	2016	2017	2018	2019	2020	2021	2022	2023	2024
Average per capita GDP	3920.33	4016.56	4801.0	3980.42	3337.60	3700.32	4208.62	5348.30	6825
Average per capita agricultural GDP	478.78	492.92	487.55	588.16	469.07	450.54	537.25	700.00	780.00
Percentage	12.2%	12.27%	10.15%	14.77%	14%	12.17%	12.76%	13.08%	13.6%

Source: Arab Organization for Agricultural Development, Arab Agricultural Statistics Yearbook.

The table above shows that average per capita GDP experienced fluctuations during the study period. It recorded a significant increase between 2016 and 2018, rising from 3,920.33 USD in 2016 to 4,801.0 USD in 2018. However, it declined in 2019 and 2020, reaching 3,337.60 USD due to the slowdown in economic activity caused by the COVID-19 pandemic and the decline in hydrocarbon revenues. Afterwards, it increased significantly, reaching 5,682 USD in 2024.

In contrast, average per capita agricultural GDP generally recorded increasing values during the period (2016–2024), despite a slight decline in 2020 and 2021, when it reached its lowest value of 450.54 USD in 2021. Its highest value was recorded in 2023 at approximately 700 USD. These fluctuations are mainly due to climatic changes such as drought, in addition to the decline in national output caused by the COVID-19 pandemic.

Regarding the ratio of per capita agricultural GDP to per capita total GDP, the table indicates fluctuations and instability throughout the study period. The lowest percentage was recorded in 2018 at 10.15%, while the highest percentages were recorded in 2019 and 2020 at 14.77% and 14% respectively. This increase was due to the relative rise in agricultural output alongside a decline in total GDP and the reduced contribution of other sectors, including the hydrocarbon sector, during the COVID-19 pandemic.

3. The Contribution of the Agricultural Sector to Promoting Non-Hydrocarbon Exports

The agricultural sector is considered one of the strategic sectors capable of contributing to food security and promoting non-hydrocarbon exports. The degree of contribution differs from one country to another depending on the material, human, and natural resources available. However, the reality reflects otherwise, as the sector continues to face difficulties that hinder its development and prevent the achievement of self-sufficiency and the export of surplus agricultural products to foreign markets.

3.1 Contribution of Agricultural Exports to Total Exports

The agricultural sector in Algeria occupies an important position due to its contribution to national income formation, providing income for a large proportion of the population, and improving average per capita income. Therefore, material and human resources have been mobilized to improve the performance of this sector and support agricultural exports, which are considered one of the promising means for diversifying the export base, especially since some agricultural products enjoy competitive advantages in international markets.

The following table presents the evolution of the contribution of agricultural exports to total national exports during the period (2016–2024).

Table (8): Evolution of the Contribution of Agricultural Exports to Total National Exports During the Period (2016–2024)

Year	Total Imports	Agricultural Imports	Percentage	Food Imports	Total Exports	Agricultural Exports	Percentage	Food Exports
2016	46059.2	10309.1	22%	7603.0	30027.6	867.3	2%	349.1
2017	47089.5	10332.2	22%	7212.1	35191.1	756.8	2.15%	328.3
2018	46333.1	10306.0	22.24%	7385.9	41797.3	1239.4	3%	342.9
2019	41934.1	9682.3	23%	6925.9	35823.5	1299.8	3.62%	410.6
2020	34665.4	8462.3	24.41%	7601.1	22483.1	1404.6	6.24%	410.6
2021	37215.4	9893.1	26.58%	9145.8	38636	1509.4	3.63%	447.6
2022	38326.1	10164.5	26.52%	9379.1	66228.3	2796.4	4.22%	441.0
2023	41492.2	10526.4	25.37%	9706.5	57282.8	1843.3	3.21%	452

Source: Arab Organization for Agricultural Development, Arab Agricultural Statistics Yearbook.

The table above indicates that agricultural exports recorded increasing growth, rising from 867.3 million USD in 2016 to 2,796.4 million USD in 2022. This increase occurred despite the decline in total exports during 2019 and 2020 due to the decrease in hydrocarbon exports caused by the COVID-19 crisis, which demonstrates the resilience of the agricultural sector as a result of the exceptional support and facilities provided by the state during the crisis.

However, agricultural exports recorded a noticeable decline in 2023, reaching 1,843.3 million USD, which reflects the decline in agricultural crops due to unfavorable climatic conditions.

As for the contribution of agricultural exports to total exports, the percentages remained weak throughout the study period, ranging between 2% and 6%. This is due to the limited effectiveness of export restructuring and diversification efforts, in addition to the dominance of the hydrocarbon sector over foreign trade, which constitutes an obstacle to the development of non-hydrocarbon exports. This highlights the limited role currently played by the agricultural sector in supporting total exports.

Accordingly, despite the quantitative developments witnessed by the agricultural sector during certain periods, it still faces major challenges in accessing foreign markets and increasing its contribution to export diversification.

Regarding agricultural imports compared to total imports, their percentages increased during the study period, reaching the highest rate of 26.58% in 2021. This reflects Algeria’s inability to fully meet the needs of its population. Furthermore, the average value of food imports represented approximately 24.5% of total imports during the period, which constitutes a considerable proportion of total imports. This situation poses a risk to Algeria’s economic balance, particularly in light of declining hydrocarbon prices, given that hydrocarbons remain the primary source for financing national imports.

The statistics also reveal that agricultural import values exceeded agricultural and food export values throughout all the years studied, which negatively affected the agricultural trade balance.

3.2 Contribution of Agricultural Exports to Non-Hydrocarbon Exports

Algeria has made considerable efforts to develop non-hydrocarbon exports, and agricultural exports are considered one of the main pillars of non-hydrocarbon exports. In order to determine the extent of the contribution of agricultural exports to promoting non-hydrocarbon exports, the following table is presented.

Table (9): Evolution of the Contribution of Agricultural Exports to Non-Hydrocarbon Exports

Unit: Million USD

Years	2016	2017	2018	2019	2020	2021	2022	2023	2024
Non-hydrocarbon exports	1391	1367	2218	2068	1916	4578	5978	5058	3835
Agricultural exports	867.3	756.8	1239.4	1299.8	1404.6	1404.6	2796.4	1843.3	-
Percentage of non-hydrocarbon exports from total exports	4.7%	4.0%	5.4%	5.9%	8.7%	11.8%	9.1%	9.1%	7.8%
Percentage of agricultural exports from non-hydrocarbon exports	42%	53.75%	55.5%	61.35%	71.17%	30.76%	46.37%	35.27%	-

Source: Prepared by the researcher based on the annual reports of the Bank of Algeria and the Arab Organization for Agricultural Development.

The table above shows that non-hydrocarbon exports recorded increasing growth during the period (2016–2024), reaching 5,058 million USD in 2023. However, export values declined in 2020 due to the reduction in exports from other sectors as a consequence of the global COVID-19 crisis.

Despite the numerous reforms implemented in this sector, these export values remain weak compared to total exports. Concerning the contribution of agricultural exports to non-hydrocarbon exports, the percentages increased steadily during the period (2016–2020), rising from 42% to 71.17% of non-hydrocarbon exports. This reflects the impact of agricultural support programs and government policies, which played a decisive role in encouraging and developing production, while also enhancing the attractiveness and competitiveness of exports.

Nevertheless, this quantitative improvement remains insufficient for the agricultural sector to play an effective role in diversifying non-hydrocarbon exports, as the contribution of agricultural exports to total exports remains relatively weak.

The table also indicates that the recorded percentages began to decline significantly starting in 2021, reaching 30.76%. This decline is attributed to the stronger competitiveness of products from other sectors compared to agricultural products. Several factors explain this situation, including:

- Intense competition in international markets;
- Structural imbalances in the agricultural production and marketing system;
- Limited diversification;
- The absence of export standards;
- Weak logistics services;
- International quality and safety requirements.

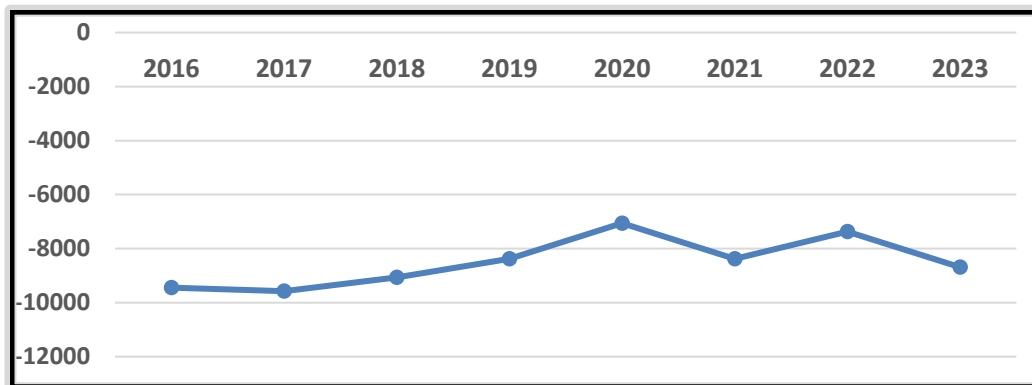
All these factors negatively affect the success and competitiveness of agricultural exports.

3.3 Evolution of the Agricultural Trade Balance in Algeria

The agricultural trade balance is considered a measure of the volume of foreign trade exchanges, as it evaluates the monetary value of exports and imports of all goods and services over a specified period of time.

After reviewing the evolution of agricultural exports and imports, it becomes possible to highlight the impact of these changes on the trade balance during the same period. The following figure illustrates the evolution of the Algerian agricultural trade balance during the period (2016–2023).

Figure (4): Evolution of the Agricultural Trade Balance in Algeria During the Period (2016–2024)



Source: Prepared by the researcher based on the annual reports of the Bank of Algeria and the Arab Organization for Agricultural Development.

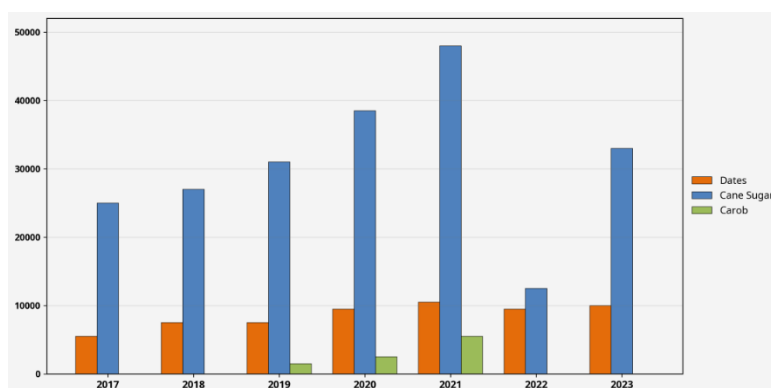
It can be observed from the figure above that the agricultural trade balance recorded negative values throughout the study period. The deficit ranged from a minimum of -7,057.7 million USD in 2020 to a maximum of -9,575.4 million USD, indicating a persistent agricultural trade deficit during this period. This deficit is mainly due to the large gap between agricultural exports and imports, as the growth in agricultural production was not sufficient to keep pace with the rapid growth of imports, which increased from year to year in order to satisfy domestic demand. This reflects the lack of food self-sufficiency and poses a threat to food security.

In addition, the increase in global prices of essential food commodities due to international disturbances, especially the Russian-Ukrainian war, caused disruptions in supply chains and raised import costs. Despite the numerous reforms undertaken in this sector and the Algerian government's policies aimed at reducing imports and encouraging domestic production, the productive capacity of the agricultural sector remained weak in terms of quantity and diversity. Agricultural exports also remained concentrated mainly in dates and a limited number of other products.

3.4 Contribution of Major Agricultural Products to the Structure of Algeria's Non-Hydrocarbon Exports

Algeria possesses several agricultural products that enjoy competitive advantages, such as dates, cane sugar, carob, legumes, and other agricultural crops. These products provide opportunities for export expansion toward neighboring markets and subsequently toward international markets.

Figure (5): Contribution of Major Agricultural Products to the Structure of Non-Hydrocarbon Exports During the Period (2017–2023)



Source: Prepared by the researcher based on data from the National Office of Statistics (ONS).

The figure above indicates that among the most important exported agricultural products during the period (2017–2023) were carob, cane sugar, and dates. The latter two represented the most significant export-oriented products, as their exports increased continuously compared to carob exports, whose cultivation remained irregular and limited. In some years, carob exports did not even appear consistently, as shown in the figure. The highest export value of carob was recorded in 2021 at 47.03 million USD. The same applies to some other products such as legumes and citrus fruits.

The data also indicate that cane sugar occupied the leading position among Algerian agricultural exports throughout the period. Its export value increased from 227.41 million USD to 434.41 million USD in 2021, reflecting an expansion in production capacity and highlighting the product's competitive position in international markets. However, in 2022, its revenues declined significantly to 159.91 million USD due to unfavorable seasonal climatic conditions.

As for date exports, they recorded significant increases, reaching their highest value in 2021 at approximately 143.15 million USD. This performance is attributed to the high quality of Algerian dates, particularly the Deglet Nour variety. It should also be noted that Algeria has been exporting dates since the 1960s, which has provided the country with a competitive advantage and enabled it to maintain a strong position in international markets over a long period, making it one of the principal suppliers.

Nevertheless, during the last two years of the study period, both cane sugar and date exports experienced declines, highlighting the need to strengthen logistical and marketing support for these products.

3.5 Challenges Facing the Promotion of Agricultural Exports in Algeria

Challenges Related to Agricultural Production

- The spread of fragmented land ownership and holdings, which has led to the loss of large areas of agricultural land;
- Agriculture depends mainly on natural resources such as fertile land and sufficient water resources for irrigation, and any decline in these resources leads to lower production;
- The agricultural sector in Algeria has witnessed a significant reduction in agricultural land due to urban expansion, land abandonment, and the conversion of fertile agricultural land into industrial projects;
- The limited availability of arable land compared to potentially reclaimable land increases the difficulty of expanding agricultural activities;
- The agricultural sector suffers from continuous climatic fluctuations that intensify water scarcity, especially since most agricultural land depends on rainfall;
- The spread of saline soils, desertification, and soil erosion negatively affects agricultural productivity;
- The lack of skilled and trained labor capable of using modern technological methods in production negatively impacts agricultural output;
- The labor market in agriculture suffers from imbalance due to migration toward cities and the weak incentives provided by the sector.

Marketing Challenges

Agricultural marketing refers to the transfer of agricultural goods from producers to consumers and their exchange in markets. However, several obstacles prevent marketing systems from reaching the desired level. These include the low quality of agricultural products offered in markets, insufficient

marketing services related to market research and studies, and the shortage of trained marketing specialists.

Weak agricultural marketing is also linked to insufficient infrastructure such as roads, transportation facilities, storage, refrigeration, and preservation systems for crops, in addition to the absence of effective market organization. These weaknesses negatively affect the distribution and commercialization of production.

Moreover, weak agro-industrial processing has had negative effects on farmers, as processing activities remain limited mainly to tomatoes, cereals, and milk, using restricted processing capacities that cannot absorb production surpluses. In addition, there is a weak promotional strategy that fails to adequately highlight the uniqueness and quality of Algerian agricultural products in foreign markets.

Challenges Related to Export Operations

Algerian agricultural exports are characterized by irregularity and production fluctuations due to the dependence of agriculture on rainfall, leading to unstable export quantities from year to year.

Furthermore, several Algerian agricultural products face significant difficulties in entering international markets because they do not fully comply with international quality standards and lack a clear competitive advantage compared to foreign products.

Another major challenge lies in the absence of effective export organization. Many exporters lack sufficient expertise in dealing with international markets, including export conditions, quality requirements, negotiation techniques, and marketing strategies. As a result, exporters face difficulties in accessing international markets regularly and establishing stable and sustainable trade relationships.

Administrative, Extension, and Technological Challenges

Although Algerian agriculture possesses considerable human and technical resources, these resources are not fully utilized to support agricultural development and activities. In addition, the absence of integration between different sectors such as trade and industry has negatively affected the development of agriculture.

Despite government efforts, technology transfer initiatives remain limited, along with the weak use of modern machinery and equipment, which negatively affects agricultural productivity.

Weak agricultural extension and research systems also constitute major obstacles facing the sector, especially in light of poor coordination between research centers and farmers. This situation hinders the dissemination of scientific practices and technologies adapted to local environmental conditions.

Challenges Related to Financing and Investment

Agricultural investment faces significant problems due to the high costs of production inputs and the difficulty of obtaining financing, especially for private investors who often lack sufficient guarantees.

In addition, the lack of clarity in agricultural policies concerning pricing and exportation negatively affects investment dynamics in the sector and reduces the effectiveness of efforts aimed at developing it. It also hinders the organization and orientation of production in line with the requirements of local and international markets.

Another challenge is the limited awareness among a large proportion of farmers regarding agricultural support programs and how to benefit effectively from them. This is mainly due to the complexity of procedures and weak awareness campaigns, which has reduced the impact of these programs on agricultural development.

3.6 Requirements for Developing and Promoting Agricultural Exports in Algeria

The development and promotion of Algerian agricultural exports require the adoption of a set of organizational, financial, and technological measures aimed at improving export operations. These requirements can be classified into three major areas as follows:

• Development of Agricultural Production

Agricultural production can be improved and developed through several modernization and enhancement methods, including:

- Modernizing agricultural practices through the widespread use of mechanization, production intensification, and the adoption of more efficient and sustainable agricultural systems;
- Strengthening agricultural training and extension services to improve competencies and encourage youth participation in agricultural activities;
- Supporting agricultural research and establishing a strategy for its qualitative and quantitative improvement through the creation and activation of specialized institutes and laboratories dedicated to agricultural research;
- Using modern technologies and digital applications to improve production quality and efficiency;
- Improving irrigation systems and water-saving equipment to ensure efficient use of water resources;
- Enhancing fertilization techniques to guarantee the effective use of agricultural inputs and increase production yields;
- Expanding and developing agricultural infrastructure such as refrigeration equipment, storage facilities, and transportation systems in order to support export chains and improve the competitiveness of products in international markets.

• Encouraging Investment

Investment can be stimulated through financial support directed toward producers and farmers via specialized agencies such as the Algerian Investment Promotion Agency. These incentives include:

- Encouraging agricultural investments through appropriate financial and legislative incentives;
- Establishing a modern agricultural model based on private investment and supporting a new generation of producers;
- Enhancing the value of agricultural land, especially in the southern regions;
- Strengthening partnerships between the public and private sectors through the establishment and support of model farms.

• Enhancing Product Competitiveness and Export Orientation

- Increasing the competitiveness of agricultural and food products and integrating them into global value chains;
- Improving the quality of agricultural products by complying with internationally recognized phytosanitary and food safety standards to ensure acceptance in global markets;
- Organizing and establishing effective and appropriate distribution networks for competitive agricultural products;

- Promoting local agricultural products such as dates, oils, and grapes in order to increase their market value and expand their export scope;
- Building an integrated export strategy and facilitating the temporary movement of individuals abroad to acquire skills and generate foreign currency;
- Modernizing processing, packaging, and transformation units to improve product quality and facilitate international marketing and export operations;
- Supporting external promotion and international marketing efforts for agricultural products in order to enhance their attractiveness and increase their market shares internationally;
- Joining regional and international organizations, alliances, and economic blocs in order to benefit from expanded access to international markets.

Conclusion

The study reached several findings that can be summarized as follows:

- The agricultural sector in Algeria possesses significant potential (water, land, and human resources) that qualifies it to achieve self-sufficiency and even export surpluses;
- Agricultural output experienced remarkable growth during the period (2016–2024), although its contribution to GDP remained relatively limited;
- The contribution of agricultural exports to total exports remains weak, despite improvements in their absolute values;
- The agricultural trade balance recorded a persistent deficit due to the high level of food imports compared to exports;
- The sector suffers from several challenges, most notably weak infrastructure, insufficient financing, weak training systems, limited competitiveness, and imbalances in marketing and export systems;
- Although agricultural exports increased within non-hydrocarbon exports, this does not necessarily reflect the real strength of the agricultural sector as much as it reflects the weakness of other sectors.

Recommendations

Based on the previous findings, the following recommendations can be proposed:

- Modernize the agricultural sector through the widespread adoption of mechanization and modern technologies;
- Strengthen agricultural investment by providing financial incentives and administrative facilities;
- Develop marketing and export systems, particularly by improving logistics and storage services;
- Support agricultural scientific research and link it to practical applications;
- Improve the quality of agricultural products to comply with international standards;
- Strengthen agricultural training and extension services to enhance human resource efficiency;

- Adopt a clear and integrated export strategy for agricultural products;
- Encourage partnerships between the public and private sectors to develop agricultural value chains;
- Focus on products with competitive advantages, particularly dates, and promote them internationally.

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