

Agricultural Insurance in Algeria: An Analytical Study of Its Evolution and Challenges (2002–2024)

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Abstract:

This study analyzes the evolution of agricultural insurance in Algeria from 2002 to 2024, focusing on turnover, growth rates, and its share in the insurance sector. The results show a cyclical pattern marked by alternating phases of contraction and recovery. Despite periods of significant growth, the sector's contribution to the overall insurance market remained modest, never exceeding 3%. The analysis points to structural challenges, including weak awareness among farmers, limited adaptation of products, and growing climate risks. The paper concludes with recommendations to strengthen agricultural insurance as a tool for risk management and a support mechanism for sustainable agriculture.

Keywords: Agricultural insurance; insurance sector; agricultural risks; climate change; Algeria.

Jel Classification Codes: G22, Q14, Q18, Q54

1. INTRODUCTION

The agricultural sector is among the most vulnerable economic sectors in Algeria, due to climatic, environmental, and economic fluctuations. Farmers face recurrent challenges such as droughts, floods, hail, storms, fires, and animal diseases. These risks threaten income stability and undermine the sustainability of agricultural production. Under such circumstances, agricultural insurance emerges as a key preventive tool to mitigate losses, ensure farmer compensation, stabilize agricultural activity, and contribute to food security.

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1.1 Research Problem

Despite the diversity of agricultural insurance products and the state's intervention through the National Fund for Agricultural Mutuality (CNMA), the contribution of agricultural insurance to the overall insurance sector in Algeria remains relatively weak. This raises the following research problem:

How has agricultural insurance in Algeria evolved in terms of premium volume and its position within the insurance market during the period (2002–2024), and what are the main challenges facing its growth and the strengthening of its role in supporting agricultural development?

1.2 Research Hypothesis

This study is based on the following hypothesis:

Agricultural insurance in Algeria suffers from a weak contribution to the overall insurance market, primarily due to low demand for its products among farmers.

1.3 Research Objectives

The main objectives of this study can be summarized as follows:

- To analyze the evolution of agricultural insurance in Algeria during the period 2002–2024 in terms of turnover, growth rates, and its share in the insurance market.
- To assess the contribution of agricultural insurance to the overall insurance sector and evaluate its significance compared to other branches.
- To identify the cyclical nature of agricultural insurance, characterized by alternating phases of expansion and contraction.
- To identify the main structural challenges hindering the development of the sector, such as low insurance awareness, limited product diversification, and increasing climate-related risks.
- To propose practical recommendations for developing agricultural insurance and strengthening its role as a risk management tool and a driver of sustainable agricultural development.

1.4 Research Methodology

This study adopts a descriptive-analytical approach supported by quantitative analysis, using official data and statistics on agricultural insurance turnover and the overall insurance sector in Algeria during the period 2002–2024. The analysis focuses on key indicators, including turnover, growth rates, and market share, while dividing the study period into distinct phases (contraction, recovery, decline, and partial rebound) to highlight their characteristics. This approach enabled the identification of the sector's cyclical patterns and their interpretation in light of structural and climatic factors, ultimately leading to practical recommendations for its development.

1.5 Structure of the Study

To address the subject, the paper is divided into four main parts:

- **Introduction**
- **The Conceptual Framework of Agricultural Insurance:** covering its definition, characteristics, and importance, along with an overview of the main agricultural insurance products in Algeria.
- **Analysis of the Evolution of Agricultural Insurance in Algeria (2002–2024):** based on statistical data, turnover, growth rates, and its contribution to the overall insurance market.
- **Conclusion:** presenting the main findings and recommendations, with an emphasis on the challenges facing the sector and proposing practical solutions to develop it and strengthen its role in supporting agricultural development and ensuring national food security.

2. Agricultural Insurance

Agricultural insurance, in line with the general classification of agricultural production, is divided into two main branches: **crop insurance and livestock insurance**. This type of insurance is designed to address the multiple risks that threaten farmers and livestock breeders, whether these risks are natural, biological, or economic in nature. In this context, the discussion will cover the main risks facing agricultural activity, provide a

conceptual overview of agricultural insurance, and present the key insurance products offered in Algeria within this field:

2.1 Risks Faced by Farmers

The agricultural sector is among the most risk-prone sectors, particularly in light of increasing climate and environmental variability. To illustrate some of these risks, the following figure presents a range of natural and economic hazards that threaten agricultural activity in Algeria. These include, in particular: transportation-related incidents, floods, storms, droughts, hail, animal mortality, fires, snow, ice, and sirocco winds.

These combined risks result in direct financial losses for farmers, jeopardizing their economic stability and the continuity of their productive activities (La mutualité agricole aujourd'hui, 2011). Given the volatile and growing nature of such hazards, agricultural insurance stands out as the most effective preventive mechanism— and, in many cases, the only instrument capable of ensuring compensation for losses and mitigating the impact of disasters on farms:

Fig.1. Selected Risks Faced by Farmers



Source: La mutualité agricole aujourd'hui, 2011, p. 10

2.2 The Concept of Agricultural Insurance

Agricultural insurance is a financial mechanism designed to mitigate the impact of losses resulting from various risks affecting the agricultural sector. It operates by distributing the financial burden of such losses across a broad pool of insured farmers. The scope of agricultural insurance is not limited to the protection of crops; it also extends to other agricultural assets such as livestock, horses, forests, aquaculture projects, and agricultural greenhouses (The World Bank, 2009).

2.3 Agricultural Insurance Products

As illustrated in Table 1, the range of agricultural insurance products developed and distributed by the National Agricultural Mutual Fund (CNMA) reflects a comprehensive approach to risk management within Algeria's agricultural sector. These products, which target both crop and livestock production, serve as strategic tools aimed at enhancing resilience, encouraging investment, and supporting sustainable rural development.

In the area of crop insurance, the CNMA offers a wide array of multi-risk insurance products that cover various climatic and biological threats such as hail, fire, floods, and pests. The inclusion of specialized insurance products for strategic crops like cereals, potatoes, tomatoes, and date palms underscores the CNMA's responsiveness to national agricultural policy priorities and to specific local risk profiles. Additionally, insurance coverage for greenhouses, nurseries, and irrigation networks reflects a forward-looking vision aimed at protecting capital-intensive agricultural assets and preserving productivity-enhancing infrastructure. (Caisse Nationale de Mutualité Agricole, 2023)

As for livestock insurance, the CNMA provides coverage across the full spectrum of Algeria's animal production sector, including cattle, sheep, goats, poultry, beekeeping, camels, horses, and even aquaculture systems. This comprehensive approach demonstrates the institution's recognition of the livestock sector's vital role in ensuring food security and maintaining socioeconomic stability in rural areas.

From a developmental perspective, these diversified and targeted

insurance products contribute to risk reduction, income stabilization for farmers, and the promotion of financial inclusion within the agricultural sphere. Moreover, these insurance offerings are aligned with broader public policy goals, particularly in terms of agricultural modernization and climate change adaptation.

Accordingly, the CNMA's insurance portfolio should not merely be viewed as a set of financial products, but rather as essential developmental instruments that contribute to the structural transformation of the agricultural sector and the long-term strengthening of its resilience.

Table 1: Agricultural Insurance Products

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Agricultural Insurance Products	
Crop Production Insurance	
Crop Fire Insurance	Multi-risk Insurance for Olive Trees
Hail Insurance	Multi-risk Insurance for Citrus Trees
Multi-risk Insurance for Plastic Greenhouses	Forest Reforestation Insurance
Multi-risk Insurance for Potatoes	Forest Nursery Insurance
Multi-risk Insurance for Artificially Grown Tomatoes	Agricultural Investment Insurance (Trust Insurance)
Multi-risk Insurance for Date Palms	Insurance for Loss of Fertilized Grains
Multi-risk Insurance for Fruit Trees	Comprehensive Grain Insurance
Tree and Vineyard Nursery Insurance (Open Field)	Multi-risk Insurance for Onions and Garlic
Continuous Irrigation System Insurance	Insurance Against Hail, Fires, and Floods
General Multi-risk Agricultural Insurance	Grain Insurance Against Floods
Multi-risk Insurance for Vineyards	Grain Insurance Against Floods (duplicate entry)
Animal Production Insurance	
Multi-risk Insurance for Cattle	Multi-risk Insurance for Camels
Multi-risk Insurance for Sheep	Multi-risk Insurance for Horses
Multi-risk Insurance for Poultry	Multi-risk Insurance for Goats
Multi-risk Insurance for Turkeys	Multi-risk Insurance for Rabbits
Multi-risk Insurance for Beekeeping	Mortality Insurance for Aquatic Species in Fish Farms

Source: Caisse Nationale de Mutualité Agricole, 2023, p. 134

2.4 Agricultural Insurance Contracts

Below is a brief explanation of selected agricultural insurance contract types:

a. Hail Insurance

Under this type of contract, the insurance company guarantees compensation for damages caused by the mechanical impact of hailstones on various crops. These may include cereals, straw and legumes, fodder, industrial crops, vegetables, fruit trees, flowers, or even greenhouse

structures (including the plastic covering and the crop itself). (Boulahia, 2008)

b. Storm Insurance

This type of insurance covers damages or quantitative losses caused by strong winds that result in partial or total destruction of crops, including fruit trees, date palms, vineyards, greenhouses (both the plastic covering and the crops inside), nurseries, and other agricultural assets. (Bourad, 2007)

c. Flood Insurance

Flood insurance provides coverage for quantitative losses resulting from damage to crops, fruit trees, date palms, vineyards, potatoes, greenhouses, and nurseries caused by floodwaters. The source of flooding may include surface water runoff, underground pipeline leakage, drainage system overflow, or the inundation of seawater, rivers, springs, ponds, and lakes. (Bourad, 2007)

d. Frost Insurance

This insurance contract covers quantitative losses resulting from changes in the intensity of a natural factor caused by frost affecting parts of plants (such as potatoes and legumes), fruit trees, and nurseries.

e. Snow Insurance

This type of insurance covers quantitative losses resulting from the collapse of greenhouse roofs due to the accumulation of snow, which leads to damage to the crops inside. (Tahri, 2011)

f. Sirocco Wind Insurance

This insurance contract covers quantitative losses caused by hot, dry sirocco winds that damage the above-ground parts of plants as well as fruit trees. (Bourad, 2007)

g. Rain Insurance

This contract covers quantitative losses resulting from rainfall on ripe dates, which leads to their deterioration.

h. Sun Insurance

This type of insurance covers quantitative losses caused by the harmful effects of sunlight on the leaves of fruit trees and vineyards, leading to leaf scorching. (Tahri, 2011)

i. Livestock Mortality Insurance

This insurance covers the loss of animals resulting from natural death, accidents, or diseases. The coverage also applies in cases where animals are culled for preventive purposes or to limit damage, provided the culling is ordered by public authorities or the insurance company. (Journal Officiel de la République Algérienne, 1995)

j. Comprehensive Poultry Insurance

This coverage includes poultry mortality resulting from diseases, poisoning, or culling orders issued by public authorities or the insurance company. (Bourad, 2007)

2.5 The Role of Agricultural Insurance

Agricultural insurance plays a pivotal role in agricultural development, as it serves as a preventive and effective tool for managing climate-related risks. This role is illustrated in the following figure, which highlights the key functions of agricultural insurance (La mutualité agricole aujourd'hui, 2011):

- Preserving agricultural and rural resources.
- Ensuring a minimum income level.
- Maintaining farming activity.
- Securing the financial solvency of the farmer and/or the bank.
- Ensuring food security.
- Stabilizing the economy.

2.6 Benefits of Agricultural Insurance

The implementation of an effective and feasible agricultural insurance program that is well-accepted by farmers represents a fundamental mechanism for supporting sustainable agricultural development—especially when real opportunities for success are present. Among the most notable positive outcomes that can be achieved through the adoption of such a program are (Ameur, 2014):

a. Reducing Agricultural Income Volatility

Agricultural insurance helps mitigate the losses borne by farmers during poor agricultural seasons, thereby contributing to income stability. This, in turn, reinforces the continuity of agricultural activity, supports national economic growth, and helps retain smallholder farmers on their land and in their rural communities.

b. Improving Access to Agricultural Finance

Agricultural insurance can serve as an alternative form of collateral accepted by lending institutions especially for small-scale farmers who often lack sufficient traditional guarantees thus facilitating their access to necessary financing.

c. Encouraging Investment and Capital Accumulation in the Agricultural Sector

By reducing the risks associated with agricultural activity, insurance plays a key role in attracting a broader range of investors and farmers to the sector, thereby supporting investment dynamics and capital formation in agriculture.

d. Supporting the Sustainability of Agricultural Lending Institutions

By enhancing the repayment capacity of insured borrowers those who have coverage on their crops and agricultural assets agricultural insurance contributes to the continuity and financial stability of lending institutions operating in the agricultural sector.

e. Promoting the Adoption of Modern Agricultural Technologies

Agricultural insurance strengthens farmers' confidence in adopting advanced production methods and modern technologies, which, in turn, contribute to improving both the quality and quantity of agricultural output.

f. Enhancing Domestic Agricultural Competitiveness

Government support for agricultural insurance is considered permissible under World Trade Organization (WTO) rules, allowing developing countries to improve the competitiveness of their agricultural products against subsidized foreign goods, particularly those from developed nations.

g. Improving Agricultural Information Systems

Agricultural insurance promotes a culture of agricultural data documentation both at the farm and national levels which enables the development of accurate databases. These databases are essential for expanding insurance coverage and for designing risk-based insurance products more effectively.

3. Agricultural Insurance in Algeria during the Period (2002–2024)

Based on the table and figures presented below, the evolution of agricultural insurance turnover in Algeria between 2002 and 2024 shows clear fluctuations between periods of sharp contraction and remarkable recovery. This pattern highlights the fragility of agricultural insurance compared to other branches of the insurance market:

a) First Phase: Contraction and Decline (2002–2007)

- Agricultural insurance turnover decreased from 1,217 million DZD in 2002 to 520 million DZD in 2007, representing a loss of more than 57% of its value within six years.
- Growth rates were almost entirely negative, reaching -23.7% in 2005 and -22.9% in 2006.
- This directly impacted the share of agricultural insurance in the total market, which dropped from 4.20% in 2002 to less than 1% in 2007.
- Such a decline reflects the weak attractiveness of agricultural insurance products among farmers, mainly due to a lack of awareness and the absence of adequate support and incentive mechanisms.

b) Second Phase: Recovery and Expansion (2008–2015)

- The sector started to recover in 2008, recording 37.9% growth, and nearly doubled between 2009 and 2015, reaching 3,739 million DZD.
- Growth rates were particularly strong in 2009 (45.6%), 2012 (38%), and 2015 (27.6%).
- This positive trend increased the share of agricultural insurance from 1% in 2008 to 2.9% in 2015.
- Such improvement can be attributed to the diversification of insurance offerings especially comprehensive coverage for crop production alongside state support for certain climate-related risks.

c) Third Phase: Renewed Decline (2016–2023)

- Despite peaking in 2015, the sector entered a new period of decline after 2016, gradually falling to 2,005 million DZD in 2023.
- Growth rates returned to negative levels in most years (-22.1% in 2017, -17.7% in 2020, -16.7% in 2023).
- The market share fell from 2.9% in 2015 to only 1.2% in 2023, reflecting the unsustainability of the sector's expansion.
- Structural factors underpin this decline, including weak demand from farmers, increasing climate-related risks (droughts, floods, hailstorms), and a mismatch between insurance products and farmers' actual needs.

d) Fourth Phase: Attempts at Recovery (2024)

- In 2024, the sector recorded positive growth of 17.5%, reaching a turnover of 2,356 million DZD.
- However, its contribution remained modest at 1.38% of the total insurance sector (171,241 million DZD).
- This indicates that any recovery remains fragile and insufficient to restore the sector's share to its mid-2010s levels.

Overall, agricultural insurance in Algeria is characterized by cyclical fluctuations between expansion and contraction, with a limited contribution to the total insurance market that, at best, did not exceed 3%. Despite various reform and support efforts, the sector remains vulnerable to climatic volatility and low awareness among farmers. Addressing these challenges requires:

- ✓ **Strengthening government support** by subsidizing part of the insurance premiums.
- ✓ **Developing innovative insurance products** tailored to farmers' needs (e.g., drought insurance).
- ✓ **Expanding the insured base** through mandatory or semi-mandatory schemes.
- ✓ **Integrating agricultural insurance** into the broader national food security strategy to ensure the sustainability of agriculture.

Table 2 and the following figures present the evolution of agricultural

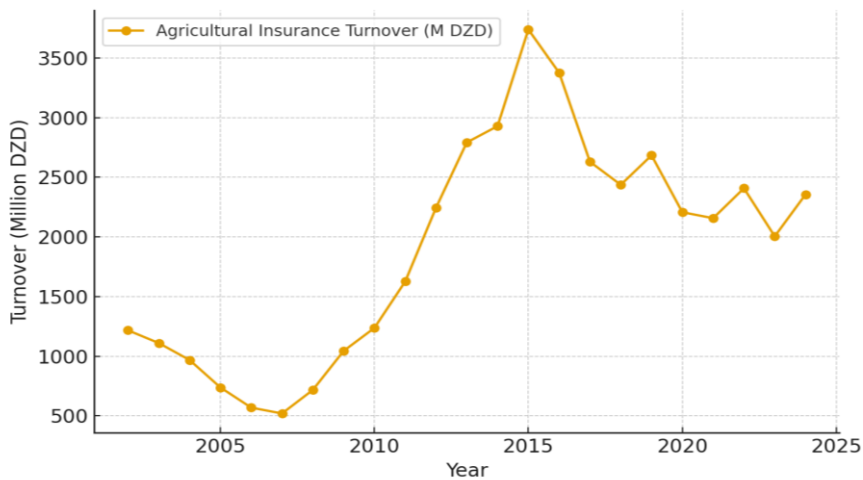
insurance in Algeria from 2002 to 2024. Data are expressed in million Algerian dinars (DZD):

Table 2. Agricultural Insurance and Its Contribution (2002–2024)

Year	Agricultural Insurance Turnover (M DZD)	Growth Rate (%)	Total Insurance Turnover (M DZD)	Agricultural Share (%)
2002	1217	-	29008	4.2
2003	1110	-8.79	31273	3.55
2004	968	-12.79	35849	2.7
2005	738	-23.76	41647	1.77
2006	569	-22.9	46504	1.22
2007	520	-8.61	53861	0.97
2008	717	37.88	68009	1.05
2009	1044	45.61	77678	1.34
2010	1237	18.49	81082	1.53
2011	1626	31.45	87329	1.86
2012	2244	38.01	99389	2.26
2013	2792	24.42	113961	2.45
2014	2929	4.91	118895	2.46
2015	3739	27.65	128684	2.91
2016	3376	-9.71	130653	2.58
2017	2630	-22.1	135760	1.94
2018	2437	-7.34	138258	1.76
2019	2684	10.14	146341	1.83
2020	2207	-17.77	137466	1.61
2021	2157	-2.27	146850	1.47
2022	2408	11.64	155796	1.55
2023	2005	-16.74	165902	1.21
2024	2356	17.51	171241	1.38

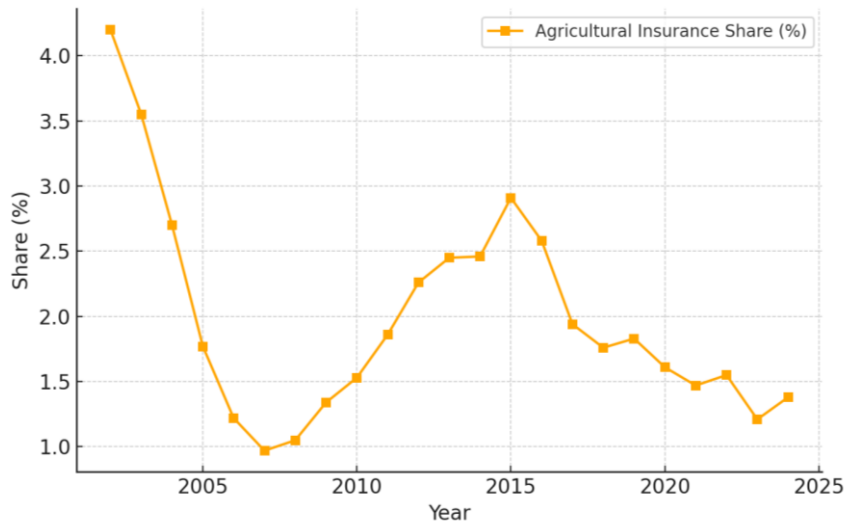
Source: Data adapted from Conseil National des Assurances, Notes de conjoncture du marché des assurances, 2002–2024

Fig.2. Agricultural Insurance Turnover in Algeria (2002–2024)



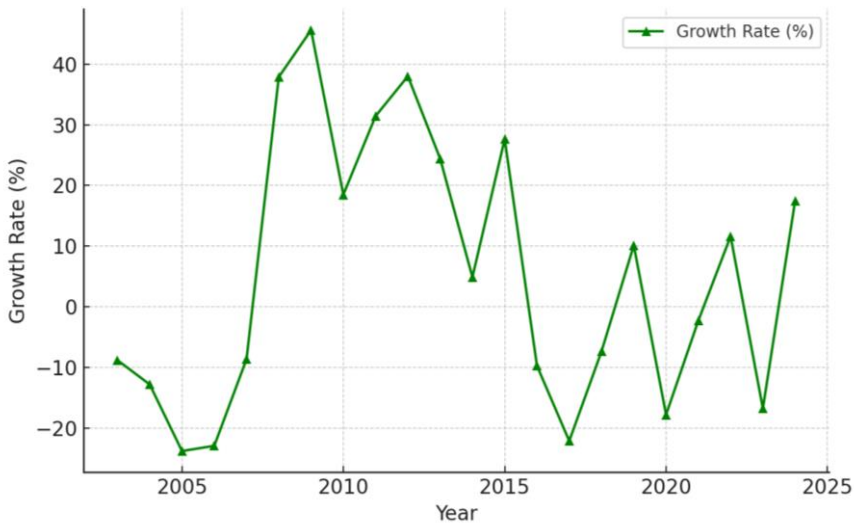
Source: Prepared by the researcher based on Table 2

Fig.3. Agricultural Insurance Share in Total Insurance (2002–2024)



Source: Prepared by the researcher based on Table 2

Fig.4. Growth Rate of Agricultural Insurance (2002–2024)



Source: Prepared by the researcher based on Table 2

4. CONCLUSION

The analysis of the evolution of agricultural insurance in Algeria during the period (2002–2024) highlights the sector's instability, alternating between phases of relative expansion and sharp contraction, which reflects its structural fragility and limited contribution to the overall insurance market.

4.1 Key Findings:

The key findings of this study can be summarized as follows:

- **Turnover fluctuations:** Table (2) shows that agricultural insurance turnover decreased from 1,217 million DZD in 2002 to 520 million DZD in 2007, before experiencing significant recovery that peaked at 3,739 million DZD in 2015. It then declined again to 2,005 million DZD in 2023, followed by a slight recovery in 2024 (2,356 million DZD).
- **Limited market share:** Despite periods of growth, agricultural insurance maintained a weak share in the total insurance market, dropping from 4.2% in 2002 to less than 1% in 2007, not exceeding 2.9% even in peak years (2015), and declining again to 1.38% in 2024.
- **Volatile growth rates:** Growth rates were highly unstable, with several negative years (2005, 2006, 2017, 2020, 2023), contrasted with very high positive growth in others (2009, 2012, 2015).

- **Weak sustainability:** Periods of recovery failed to ensure long-term stability, as they were quickly followed by downturns, confirming the sector's fragility.

4.2 Research Hypothesis:

The results confirm the validity of the research hypothesis, as the premium volume of agricultural insurance products has not developed or grown to the required level. Instead, their contribution has remained weak and limited within the Algerian insurance market, not exceeding 3% at best. This weak contribution can be attributed to several factors, including:

- Limited insurance awareness among farmers, leading to weak demand.
- Insufficient diversification of insurance products and lack of adaptation to agricultural needs.
- The growing impact of climate risks (drought, floods, hail, storms) on agricultural activity.

The study thus reveals that agricultural insurance in Algeria remains far from fulfilling its role as a strategic tool for agricultural risk management and food security. Therefore, its development requires a set of integrated measures, including:

- a. Expanding government support through direct contribution to premium payments.
- b. Developing new and innovative products, particularly drought insurance.
- c. Increasing participation by introducing mandatory or semi-mandatory insurance for certain agricultural activities.
- d. Integrating agricultural insurance into national policies for food security and sustainable rural development.

In this sense, strengthening agricultural insurance is a strategic necessity not only to protect farmers but also to ensure the long-term stability and resilience of Algerian agriculture.

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