

An Analytical Study of Agricultural Risk Insurance in Algeria (2000 - 2023)

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Abstract:

This study aims to examine the current state of agricultural risk insurance in Algeria by diagnosing the main agricultural risks arising from agricultural activities and identifying key factors that may contribute to risk management and minimize financial losses when they occur, while protecting agricultural wealth. It also includes an analysis of statistics and figures related to this insurance sector.

The study employs a descriptive and analytical approach to understand various concepts related to agricultural insurance, highlighting its importance both economically for the country and socially for farmers. This is achieved through the analysis of production statistics and compensation payments in this insurance sector for the period from 2000 to 2023.

The findings indicate that agricultural insurance is a crucial means of addressing such risks due to its numerous advantages. It provides insurance coverage for agricultural risks that investors may face, with compensation amounting to 16,957 million DZD over the study period. This significant amount illustrates the effective contribution of insurance in covering these risks.

Keywords: Risk, Agricultural Risks, Insurance, Agricultural Insurance, Algeria.

1. Introduction:

Agricultural insurance is one of the most important types of insurance due to its significant role in protecting and developing the agricultural sector through insurance institutions. Agricultural insurance, as a developmental goal, aims to sustain farmers' income, maximize their profits, reduce risks affecting their crops, and compensate for potential losses. This leads to encouraging and motivating farmers to produce, thereby developing and stabilizing the agricultural sector and achieving food security. Given that the agricultural sector is one of the most risk-prone sectors, insurance companies have developed agricultural insurance services offering various coverage options. Therefore, insurance is one of the best methods for managing such risks, as it allows for transferring the risk burden from farmers to the insurance company, which in turn covers losses for all insured risks in exchange for the insurance premium paid by the policyholder for security.

1.1. Problem Statement:

Given the importance of the agricultural sector in the national economy, this article aims to address the following issue: What is the contribution of insurance in managing and covering agricultural risks in Algeria?

To clarify this question further, we have posed several secondary questions:

- What are agricultural risks?
- What are the forms of agricultural insurance?
- What is the state of agricultural insurance in Algeria?

2.1. Study Hypotheses:

Based on the presentation of the research problem, the following hypotheses can be formulated:

- A fundamental characteristic of agricultural work is its exposure to nature, where work is done, land is prepared, and various crops are planted under natural influences. The risks affecting the agricultural sector are numerous and varied, some of which are due to natural and social phenomena.
- There are several forms of agricultural insurance, aimed at compensating farmers for the losses they incur.
- The agricultural risk insurance system is of significant importance to agricultural investors by covering risks and committing to compensation in the event of damage.

3.1. Study Objectives:

This study aims to contribute to ensuring the safety of the agricultural sector by finding mechanisms to cover agricultural risks, thereby reducing risks and losses in the event of any incidents. In general, this study aims to achieve the following objectives:

- Diagnose the forms of agricultural insurance.
- Highlight the importance of agricultural insurance in protecting farmers and ensuring their survival.

- Diagnose the state of agricultural insurance in Algeria and assess its contribution to covering agricultural risks.

4.1. Importance of the Study:

The importance of this study lies in achieving its objectives by seeking to reduce the risks and associated losses in the agricultural sector, emphasizing risk management, and determining suitable insurance measures. Additionally:

- This study serves as a scientific contribution to the field of insurance, focusing on protecting farmers.
- We aimed to address agricultural risks using insurance mechanisms.
- Highlight the importance of agricultural insurance in preserving farmers' assets and providing a clear picture of the state of agricultural insurance in Algeria.

5.1. Study Methodology:

In analyzing the presented issue and verifying the validity of the adopted hypotheses, we followed a descriptive-analytical approach, using these methods to describe agricultural insurance, analyze, and understand the data and statistics. To summarize and understand the topic, this article is divided into two main sections:

- Theoretical foundations of risk and insurance
- Analytical study of agricultural insurance in Algeria

2. Theoretical Foundations of Risk and Insurance

Understanding, identifying, measuring, and evaluating risks helps in taking appropriate measures to reduce or eliminate them at the lowest possible cost. Insurance is one of the best methods for managing risks, as it allows for transferring the risk burden to the insurance company.

2.1. Nature of Risk

Despite advancements in available resources for individuals regarding personal and general predictions and scientific forecasting to make sound decisions, this does not eliminate the anxiety associated with the presence of risk.

1.1.2. Concept of Risk and Its Causes

a. Concept of Risk: The definitions of risk vary among insurance scholars, economists, and statisticians. Some of these definitions are as follows:

- "Tarek Abdel Aal Hamad" defined it as: "A situation in which there is a possibility of deviation from the desired, expected, or hoped-for outcome." (1)
- "Nashid Mahmoud Abdel Salam" defined it as: "The uncertainty of the financial outcome in the future from a decision made by an economic individual in the present based on past studies of the behavior of natural or general phenomena." (2)
- "Madura" defines it as: "The likelihood of deviation of outcomes from expectations." (3)
- Risk can be defined as: "The probability of a loss in income or wealth due to a specific risk occurring." (4)

b. **Causes of Risk (Factors Contributing to Risk Realization):** In practice, risk is always associated with its causes, such as fire risk, disease risk, theft risk, etc. Dr. Salama Abdullah Salama defines it as: "A set of natural and general phenomena that directly or indirectly affect the outcome of decisions made by individuals during their lives."

The causes of risk or factors contributing to the realization of risk are a group of factors that increase the frequency of risk or the likelihood of loss occurrence, and they can increase the severity of material loss resulting from the risk, or both (5). Dr. Salama Abdullah Salama defines them as: "A set of natural and general phenomena that directly or indirectly affect the outcome of decisions made by individuals during their lives." (6)

Factors contributing to risk can be divided into three categories:

- **Objective Factors:** These consist of the characteristics of the object of risk that increase the likelihood of loss or the magnitude of material loss or both. These causes are usually related to the natural or physiological properties of the object or person at risk (6).
- **Personal Factors:** These are factors arising from human intervention in natural processes, either intentionally or unintentionally (8).
- **Natural Factors:** These factors increase the likelihood of various types of risk due to natural disasters such as floods, volcanoes, earthquakes, and hurricanes. For example, constructing a building in seismic areas is highly susceptible to collapse and damage (9).

2.1.2. Classification of Risk

Risks can be classified based on their outcomes into two main types:

a. **Non-Economic Risks:** These are risks that, when realized, lead to moral losses that cannot be evaluated monetarily (10).

b. Economic Risks: These are risks that result in financial or economic losses borne by the decision-maker, such as the risk of fire, theft, or death.

2.2. Risks Facing the Agricultural Sector

The agricultural sector includes both plant and animal production.

1.2.2. Animal Wealth: This includes cattle, camels, sheep, and others. These animals are exposed to risks such as disease, early and compulsory slaughter, injuries, and risks associated with transportation. Insurance covers the loss of animals due to natural death, accidents, or diseases. Coverage also applies in cases where animals are slaughtered to prevent or mitigate damage, if mandated by public authorities or by the insurer (11).

2.2.2. Risks to Agricultural Crops: An essential characteristic of agricultural work is its dependence on nature, with activities like preparing land and planting crops affected by natural influences. The risks affecting the agricultural sector are numerous and varied, some due to natural phenomena and others due to social phenomena.

a. Natural Risks: These result from natural phenomena, meaning factors beyond human control and prevention. These risks include:

- **Hail and Frost:** Hail is one of the most dangerous weather factors for plants as it causes leaf damage and fruit loss. Frost, on the other hand, primarily affects flowering and can lead to the complete destruction of the plant.
- **Winds:** Winds can have harmful effects on crops, causing leaf tearing, uprooting, and falling fruits during the ripening stage, leading to significant material damage to farmers.
- **Humidity and Drought:** Insufficient moisture for plant growth results in reduced production, while drought refers to decreased atmospheric humidity, leading to high temperatures and significant water loss in plants, causing their death.
- **Earthquakes:** These cause ground fissures leading to the destruction of lives, crops, and buildings.
- **Floods:** Floods can suffocate, wash away, and damage plants.

b. Social Risks: These are no less severe than natural risks and include: (12)

- **Fire:** Most fires are caused by human intervention, whether intentional or accidental, leading to damage to crops or property. Fires are more common during the harvest season and summer.
- **Theft and Burglary:** This risk is prevalent in agriculture due to the vast area of agricultural land, making it challenging to provide complete protection.

c. Plant Diseases: Plant diseases are classified into parasitic, bacterial, viral, and non-parasitic diseases. Non-parasitic diseases occur due to physiological differences or unsuitable environmental conditions for plant growth. Examples include scab disease affecting tomatoes and rust disease affecting wheat. Diseases impact crop yield, and can lead to plant death or affect the quality and appearance of fruits, reducing their market value, and incurring treatment and prevention costs.

d. Insect Pest Risks

3.2. Theoretical Foundations of Agricultural Insurance

Humans face many pure risks that result in financial or moral losses, or both. Thus, they have historically sought appropriate solutions and means to address these risks and prevent their effects. One of the preventive measures is insurance.

1.3.2. Nature of Agricultural Insurance

a. Definition of Insurance: There are several definitions of insurance, varying based on the perspective of economists, insurance professionals, or legal scholars.

- **Legal Definition:** According to legal scholars, insurance is defined by "Slaughter" as buying security. The insured, motivated by the desire to protect themselves against a risk, purchases from the insurer the right to compensation if the risk materializes, with the purchase price referred to as the premium. Algerian Civil Law defines insurance in Article 619 as: "A contract in which the insurer undertakes to pay the insured or a third party designated by the insured a sum of money, income, or any other financial performance in case the risk specified in the contract occurs, in exchange for premiums or other financial contributions." (13)

- **Economic Definitions:** Economists "Friedman" and "Savage" define insurance as: "An individual who purchases fire insurance for their home prefers to bear a small, certain financial loss (the insurance premium) rather than face a mix of a small probability of a large financial loss (the full value of the house) and a high probability of not losing anything. This means preferring certainty over uncertainty."

Insurance professionals' definition, according to "Willett," describes insurance as a social project aimed at creating a fund to address uncertain financial losses, which can be avoided by transferring the risk burden from multiple individuals to one or a group of individuals.

b. Definition of Agricultural Insurance

Insurance, in general, is a form of risk management used to protect against potential losses. Agricultural insurance is a branch of insurance and can be defined as: A means aimed at reducing losses due to risks faced by the agricultural sector

by distributing the burden of these losses among a large group of participating farmers. Agricultural insurance covers not only crops but also livestock, horses, forests, aquaculture, and greenhouses. It is also a financial tool that protects producers from potential risks in agricultural production that they cannot control (14).

2.3.2. The Emergence of Agricultural Insurance

Agricultural insurance has been present in some developed countries for over a century, whereas the sector remains relatively weak in middle-income and low-income countries. During the period between the 1950s and the 1980s, significant progress was made in public sector crop insurance programs in Latin America and Asia, typically linked to seasonal production loans for small farmers.

Similar government programs were introduced in Soviet Union countries since the 1990s, as a response to the deterioration of public sector programs and their decreased impact on farmers. Many governments also promoted agricultural insurance through the private commercial sector, often with government financial support in a public-private partnership framework.

Agricultural insurance is considered a complement to other tools aimed at ensuring the stability of producer incomes. Governments typically focus on managing agricultural production and input markets as tools to stabilize producer incomes through price support mechanisms and input subsidies. In this context, agricultural insurance is seen as an addition to these traditional tools, addressing production risks.

2.3.3. The Importance of Agricultural Insurance

Agricultural insurance aims to help stabilize and secure farmers' needs by covering their crops and property against natural disasters. The core idea behind agricultural insurance is cooperation, where multiple individuals join together with a common goal: to mitigate the expected risks. They collectively accept the potential risks and share the burden, thus alleviating the impact of such risks and the resulting damages (15).

The importance of agricultural insurance can be summarized as follows:

- **Prevention, Limitation, and Security:** While insurance does not prevent risks from occurring, it helps mitigate the losses they cause if they do. It also enables farmers to expand production by attracting additional resources through credit. Agricultural insurance is a sure guarantee for financing agricultural production.
- **Stabilizing Food Supply:** Agricultural insurance helps provide and stabilize food supplies within the country, leading to social and political stability.
- **Compensation and Loss Distribution:** If a loss occurs to a farmer, it may lead to the complete loss of agricultural income. However, distributing this loss among a group of people makes the burden on each individual minimal, which helps maintain agricultural activity.
- **Income Stabilization and Development:** Agricultural insurance ensures a minimum income for farmers, providing them with the stability necessary for development. It also supports the expansion of agricultural activities by encouraging investment in rural areas, thereby increasing the national income.
- **Reducing Government Spending:** Agricultural insurance helps reduce government expenditures allocated for disaster prevention and conservation of agricultural and rural resources.
- **Encouraging Technological Adoption:** It boosts farmers' confidence in adopting modern technological methods that enhance production.

2.3.4. Types of Agricultural Insurance

Agricultural insurance takes several forms (16):

- **Plant Insurance:** The insurer is obligated to compensate the insured for damages to crops according to the agreed insurance contract, provided that premiums are paid on time and preventive measures are adhered to. Plant insurance includes:
 - Crop fire insurance
 - Feed and hay fire insurance
 - Composite insurance: against frost and crop fires
 - Multi-risk insurance for greenhouses
 - Multi-risk insurance for potatoes
 - Multi-risk insurance for industrial tomatoes
 - Multi-risk agricultural insurance
 - Multi-risk insurance for fruit trees
 - Insurance for nurseries of fruit trees and vines
 - Multi-risk insurance for olive trees
 - Irrigation network insurance
- **Animal Insurance:** This covers livestock against risks:
 - Multi-risk insurance for cattle
 - Multi-risk insurance for poultry and turkeys

- Multi-risk insurance for bees
- Multi-risk insurance for sheep
- Multi-risk insurance for horse breeding
- Multi-risk insurance for goats
- Multi-risk insurance for rabbits

• **Civil Liability Insurance:** In agricultural activities, civil liability is assigned to anyone acting within their functions regarding their responsibility towards others. Insurance companies can provide coverage for civil liability risks to compensate for damages caused to others. Civil liability insurance aims to cover material losses resulting from the insured's responsibility for damages inflicted on others for which they are legally liable. It also provides protection through the guarantee offered by the insurance company, enabling the farmer to compensate the affected party for losses caused by their liability. The insurance contract should consider the insured amount or maximum coverage, which may be related to various factors such as the nature and type of agricultural activity and the area of land used.

3. Analytical Study of Agricultural Insurance in Algeria

3.1. Regulatory and Supervisory Bodies for Agricultural Insurance

3.1.1. Supervisory and Regulatory Bodies Following the enactment of Law 04-06, the minister in charge of finance no longer makes decisions regarding insurance sector oversight. Instead, a specialized insurance oversight body was established, along with other bodies that assist in the oversight process. These include:

• **Supervisory Committee:** Established under Law 04-06 dated February 20, 2006, this body is directly responsible for insurance supervision.

○ **Duties:** The Supervisory Committee is tasked with:

- Ensuring compliance by insurance companies and brokers with legislative and regulatory provisions related to insurance and reinsurance.
- Requiring auditors to inform the Supervisory Committee of any potential deficiencies observed in insurance and/or reinsurance companies during their mandate.
- Verifying information about the sources of funds used in establishing or increasing the capital of an insurance and/or reinsurance company.

• **Insurance Directorate:** This body is responsible for insurance within the Ministry of Finance and is one of the directorates under the General Treasury. It implements the oversight process managed by the Supervisory Committee and allows the Ministry of Finance to stay informed about the sector (18).

○ **Duties:** Its tasks include:

- Studying and proposing necessary measures for appropriate coverage in national, economic, and social property insurance.
- Supervising the management of bodies engaged in insurance activities under the authority of the Minister of Finance.
- Reviewing applications for licensing insurance and reinsurance companies and brokers.
- Centralizing, standardizing, and summarizing accounting and financial operations for insurance and reinsurance activities and preparing periodic reports.

• **National Insurance Council (CNA):** Established on January 25, 1995, by Order No. 95-07 and began its activities on October 24, 1997. It is an advisory body affiliated with the Ministry of Finance, aiming to develop and regulate insurance activities as a cornerstone of the national economy (19).

○ Defined by Article 274 of Algerian law as: "An advisory body called the National Insurance Council is established, chaired by the Minister of Finance. The Council is consulted on matters related to the state of insurance and reinsurance activities, sector organization, and development. It meets at the request of its president or the majority of its members and may draft preliminary projects for legislative or regulatory texts within its jurisdiction, as assigned by the Minister of Finance or on its own initiative." (20)

The Council includes representatives of the state, insurers, brokers, policyholders, sector employees, and insurance experts.

• **Algerian Union of Insurance and Reinsurance Companies (UAR):** Established on February 22, 1994, and accredited on April 24, 1994, under Law No. 31-90 dated December 4, 1994, concerning associations with professional association status.

• **Specialized Risk Tariff Body:** Established within the Ministry of Finance, this body focuses on preparing tariff projects (21), studying and updating existing insurance tariffs. The elements of risk tariffs include (22): risk type, probability of occurrence, and underwriting and management expenses.

3.1.2. Conclusion of Agricultural Insurance Contracts

The conclusion of agricultural insurance contracts is subject to the fulfillment of substantive conditions. However, it is practically characterized by specific procedural and technical requirements regarding the stages of agreement, the commencement of insurance coverage, and its documentation.

• **Practical Conclusion of Insurance:** The practical conclusion of agricultural insurance contracts involves several stages:

○ **Insurance Request:** The process typically begins with the applicant submitting an insurance request to the insurer when they wish to insure against a specific agricultural risk. This involves direct communication with the insurer or through an agent. The request usually includes detailed questions to identify the insured person, the risk to be covered, surrounding conditions, the desired coverage amount, premium amounts, and payment schedules (23).

○ **Temporary Coverage Note:** If the insurer agrees to cover the risk based on the details provided in the request, a "temporary note" is issued, indicating the company's commitment to cover the risk under the specified conditions (24).

○ **Insurance Document:** The insurance document is one of the most crucial forms of the contract and constitutes a formal contract. It includes:

- Parties involved and their identification details.
- Precise identification of risks according to their nature and type, including the insured item or person and excluded risks.
- Specification of the premium and payment methods, whether immediate, deferred, or periodic (annual, monthly).
- Specification of the coverage amount, which varies from one type of insurance to another.
- The date of the insurance contract, marked by the signing of the insurance contract by both parties.

• **Obligations Arising from the Insurance Contract:** The insurance contract is bilateral, creating obligations for both the insurer and the insured.

○ **Insured's Obligations:** The insured is obligated to:

- Pay the premium.
- Provide accurate information about the risk and notify any changes in risk.
- Report the occurrence of the risk.

○ **Insurer's Obligations:** The insurer is obliged to pay the insurance amount, which may be a capital sum, periodic income, or compensation, upon the occurrence of the insured risk. This differs between personal insurance and property insurance, where personal insurance may include savings elements, such as reserve accounts in favor of the insured. The insurance amount may be due due to the occurrence of the risk or the passage of time.

For property insurance, the insurer must pay the insurance amount or compensation within the agreed or specified deadlines according to general conditions. Article 13 of the Algerian Insurance Law states that compensation or the insurance amount specified in the contract must be paid within the timeframe outlined by the general terms of the insurance contract. If the damage requires expert assistance for assessment, the insurer must seek this expertise within seven days from receiving the accident report.

• **Interest in Agricultural Insurance:** Article 621 of the Algerian Civil Code states: "Any lawful economic interest may be insured," and Article 29 of Order No. 95-07 on insurance states: "Any person with a direct or indirect interest in preserving property or avoiding risk may insure it." From this, it can be concluded:

- The motivation for contracting is economic interest, meaning a financial value.
- The provision of "indirect interest" allows for the insurance of anticipated profits. According to Article 621, the interest must be lawful and not contrary to public order and morals, as stipulated in Article 97 of the Algerian Civil Code, or the contract will be void.

3. 2. Analysis of Agricultural Insurance Activity and Coverage in Algeria

3.2.1. Production Analysis:

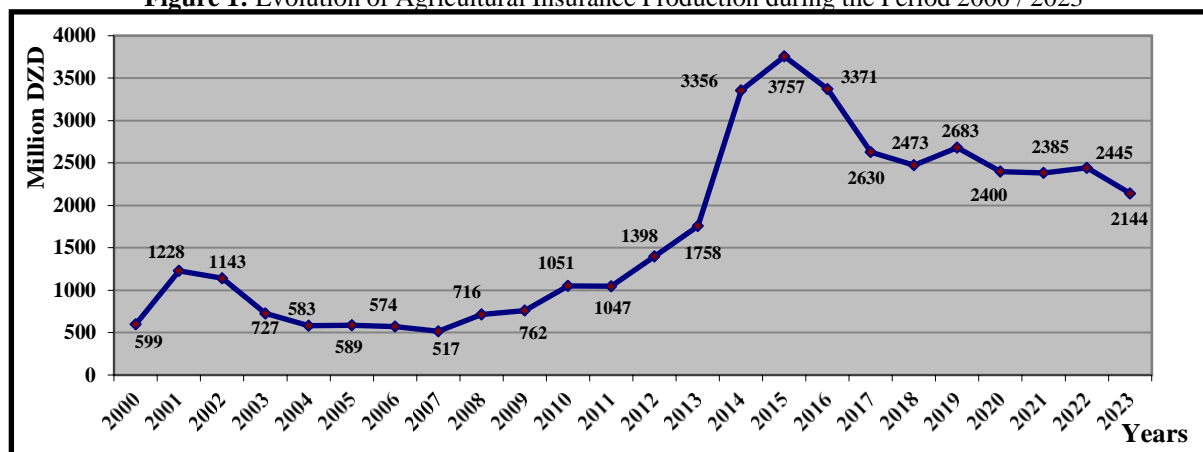
The following table aims to illustrate the development of agricultural insurance production in Algeria from 2000 to 2023 and analyze it.

Table 1: Agricultural Insurance Production for the Period 2000 / 2023 Unit: Million DZD

2007	2006	2005	2004	2003	2002	2001	2000	Years
53.789	46.474	41.620	35.758	31.311	28.985	21.511	19.501	Production Volume
517	574	589	583	727	1.143	1.228	599	Agricultural Insurance
2015	2014	2013	2012	2011	2010	2009	2008	Years
127.684	125.505	113.995	99.630	86.675	81.713	77.339	67.884	Production Volume
3757	3 356	1758	1398	1047	1051	762	716	Agricultural Insurance
2023	2022	2021	2020	2019	2018	2017	2016	Years
168.675	155.886	144.773	137.556	144.451	137.732	130.240	129.590	Production Volume
2144	2445	2385	2400	2683	2 473	2 630	3371	Agricultural Insurance

Source: Prepared by the researchers based on: Ministère de Finance, Direction Générale du Trésor, Direction des Assurances, Activité des Assurances en Algérie, Alger (Various Years).

Figure 1: Evolution of Agricultural Insurance Production during the Period 2000 / 2023



Source: Prepared by the researchers based on the data from the previous table.

From the table, we observe that the turnover in agricultural insurance is relatively low but saw growth during 2001 and 2002, increasing from 599 million DZD in 2000 to 1143 million DZD in 2002. This growth resulted from the implementation of programs supported by the National Agricultural and Rural Development Plan, funded by the National Fund for Agricultural Cooperation and the Agricultural Bank for Rural Development. Under this plan, agricultural insurance was a requirement for benefiting from funding for agricultural investment projects.

The table also shows that the turnover in agricultural insurance did not exceed 1% from 2005 to 2013, with agricultural insurance turnover only amounting to 589 million DZD. Furthermore, there was a decline in agricultural insurance turnover in 2016, 2017, and 2018, where it decreased from 3757 million DZD in 2015 to 2473 million DZD in 2018. This decline is attributed to several factors, notably the austerity measures implemented by the state due to the recent drop in oil prices, which affected support for farmers and, consequently, agricultural investments, negatively impacting agricultural insurance turnover. Additionally, recent years have seen a scarcity of rainfall, which has adversely affected the agricultural sector and led to a reduction in agricultural insurance turnover.

In 2019, the national insurance sector achieved a turnover of 144.4 billion DZD compared to 137.7 billion DZD in 2018, marking a positive growth rate of 6.1%. During this year (2019), agricultural insurance continued to grow, registering an increase of 8.5%. This increase is attributed to the expansion of agricultural insurance product lines (including livestock production, crop production, and other agricultural damages). According to the National Insurance Council, this growth is due to the signing of many agreements in areas such as "multi-risk for cattle," "multi-risk for goats," and "multi-risk for greenhouses."

In 2020, insurance companies were not immune to the health crisis (COVID-19) and the effects of measures to prevent and control the coronavirus pandemic, impacting the entire insurance sector. There was a decrease in turnover of approximately 7 billion DZD, affecting all branches of insurance. Agricultural insurance also saw a sharp decline in turnover compared to 2019, decreasing by 283 million DZD, or 12.8%, due to difficulties in marketing services and agricultural products.

This decline is primarily attributed to delays in launching the "Seed of Cultivation 2020/2021" campaign. The delays are linked to the periodic health crisis of COVID-19 and restrictions related to financing the campaign credits by BADR Bank.

In 2021, almost all branches of damage insurance experienced growth in their volume or turnover, except for the "agricultural risks" branch, which saw a 1% decline. In terms of the structure of the damage insurance portfolio, the "automobile" branch and "property damage insurance" branch dominate the damage insurance market with shares of 47% and 46%, respectively, totaling 93%. Consequently, the contribution of other branches remains relatively weak, with agricultural insurance representing only 2% of damage insurance in 2020 and 2021. Its activity level decreased by 15 million DZD in 2021, following a decline of 482 million DZD in 2020.

In 2022, all branches of damage insurance saw an increase in sales volume. The structure of the damage insurance portfolio remained dominated by the "automobile" branch and the "property damage insurance" branch, with shares of 47% and 46%, respectively, totaling 93%. The contribution of agricultural insurance remained at 2% of damage insurance, with a slight increase in activity level to 60 million DZD in 2022.

In 2023, the agricultural insurance branch experienced a decline in turnover, decreasing by 301 million DZD compared to 2022.

Despite the critical importance of agricultural insurance in providing security and coverage for farmers and thus contributing to the development of the agricultural sector, its contribution to national insurance turnover has not exceeded 3% during the study years. This indicates a lack of interest among farmers in this type of insurance, due to several factors,

including weak insurance culture among Algerian farmers, religious views on insurance, high insurance premiums, and the lack of suitable insurance products for various agricultural activities in Algeria.

3.2.2. Analysis of Compensation:

The following table will attempt to clarify and analyze agricultural insurance compensation in Algeria during the study period.

Table 2: Development of Agricultural Insurance Compensation during the Period 2000/2023 Unit: Million DZD

2007	2006	2005	2004	2003	2002	2001	2000	Years
25470	23 994	52.361	17.150	17.146	14.804	14.022	12.560	Compensation Volume
237	975	295	401	427	314	304	474	Agricultural Insurance
2015	2014	2013	2012	2011	2010	2009	2008	Years
67 821	61 832	54 059	50 707	43 176	35 678	36056	34772	Compensation Volume
1527	1092	636	533	481	412	172	248	Agricultural Insurance
2023	2022	2021	2020	2019	2018	2017	2016	Years
74 136	69 658	72 588	62 361	74 544	69 497	64 962	12063	Compensation Volume
912	893	1110	1235	944	1023	1036	1276	Agricultural Insurance

Source: Prepared by the researchers based on: Ministère de finance, Direction générale du trésor, Direction des Assurances, Activité des Assurances en Algérie, Alger (Various years).

From the table, we observe that compensation amounts in the initial years were relatively stable. However, in 2003, there were significant losses due to the crash of an Air Algeria Boeing and the May 21, 2003 earthquake, which led to compensation rising to 2.3 billion DZD that year.

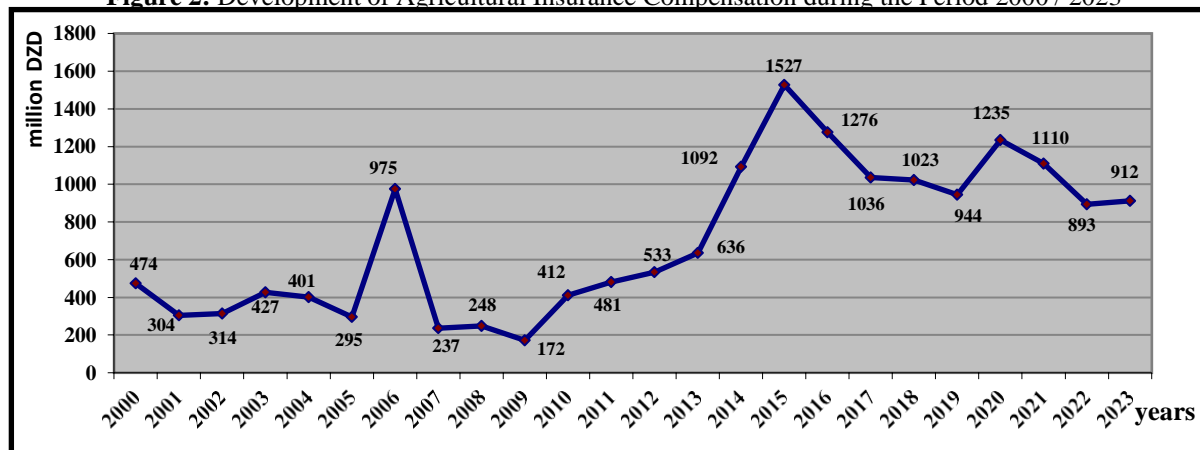
The year 2005 was marked by the complete settlement of the Skikda disaster (GLIK explosion) that occurred in January 2004. The scale of the incident was 32 billion DZD, with compensation rising from 17 billion DZD in 2004 to 52 billion DZD in 2005. This increase notably affected CAAT, which was the insurer for this risk, and CASH, which also contributed to the coverage.

In contrast, 2006 saw a return to normal compensation levels, estimated at around 24 billion DZD. The same trend was observed for 2006 and 2007 regarding agricultural risks, where compensation dropped significantly from 975 million DZD in 2006 to 237 million DZD in 2007, representing a negative change of 76% (a decrease of 738 million DZD).

In general, with regard to agricultural insurance compensation, the table above shows that compensation amounts are relatively low compared to other types of insurance. In most years, agricultural insurance compensation did not exceed 2% of total compensation.

It is also noted that compensation levels for agricultural insurance in recent years (since 2014) have been significant due to losses from floods, adverse weather conditions, and fires affecting crops during this period. Additionally, compensation was provided to farmers affected by foot-and-mouth disease, which resulted in the culling of 2,500 cattle due to the disease.

Figure 2: Development of Agricultural Insurance Compensation during the Period 2000 / 2023



Source: Prepared by the researchers based on the previous table.

From the figure above, we observe that agricultural risk compensations exhibit some volatility, which reflects the principle of probability in insurance contracts. This means that compensation amounts cannot be controlled precisely. For instance, in 2000, compensation amounts were estimated at 474 million DZD, while in 2016, this amount rose to 1,527 million DZD, indicating an increase of 1,053 million DZD.

In 2017, agricultural insurance compensation decreased by 19.4% compared to 2016. This decline was due to the agricultural insurance branch related to livestock production, which dropped by 39% because of the non-renewal of livestock contracts signed by young promoters registered in ANSEJ and CNAC programs. Compensation for "crop production" and "multi-risk agricultural machinery and equipment" also fell by 18.2% and 26.7%, respectively.

In 2019, agricultural risk compensation decreased by 79 million DZD, with the amount dropping from 1,023 million DZD in 2018 to 944 million DZD in 2019, representing a decrease of 8%, despite these compensations constituting only 1% of the total compensations.

In 2020, all insurance branches experienced a decline in compensations except for the "transport" and "agricultural risks" branches. The compensation amount in the agricultural sector increased from 944 million DZD in 2019 to 1,235 million DZD in 2020, achieving a notable increase of 291 million DZD, or 31%. This increase was due to compensations for the recent fires that affected several regions in Algeria, covering farmers and livestock breeders.

In contrast, in 2021, all insurance branches saw an increase in compensations except for the "transport" and "agricultural risks" branches. Compensation in the agricultural sector dropped from 1,235 million DZD in 2020 to 1,110 million DZD in 2021, reflecting a significant decrease of 125 million DZD, or 10%.

In 2022, all insurance branches experienced a decline in compensations, with claims settlements decreasing by 4% compared to 2021. The compensation amount dropped by about 3 billion DZD, from 72.5 billion DZD in 2021 to 69.6 billion DZD in 2022. Agricultural risk compensation decreased by 217 million DZD, or 20%, dropping from 1,110 million DZD in 2021 to 893 million DZD in 2022.

3.2.3. Obstacles to the Expansion of Agricultural Insurance Services

Several obstacles hinder the expansion and widespread adoption of agricultural insurance services, including:

- **Lack of Awareness:** Farmers' unfamiliarity with the benefits of insurance, their apprehension toward new activities, reluctance to bear additional costs, and heavy reliance on state support for subsidies and aid necessitate significant initial efforts in awareness and education.
- **Limited Expertise:** The shortage of specialized experts in field agricultural insurance and weak practical experience negatively impact the calculation of premiums and compensations and convincing farmers of the importance of insurance in supporting and protecting agricultural production.
- **Inadequate Information:** The lack of accurate data on production, agricultural statistics, cultivated areas, and farmers' losses.
- **Cultural and Social Factors:** The low level of cultural, social, and political maturity in agricultural insurance, which requires sufficient maturity to understand and meet the needs for the success of this type of insurance.
- **Religious Views and Costs:** Farmers' religious views on insurance, high insurance premiums, and the lack of suitable insurance products for various agricultural activities in Algeria.
- **Reliance on Government Aid:** Dependence on government subsidies and aid after every agricultural risk or disaster, leading farmers to neglect protecting their agricultural assets.

4. Conclusion

The agricultural sector is one of the most important economic sectors due to its role in meeting increasing individual needs and providing significant employment opportunities. However, various risks hinder agricultural activity and result in losses for both farmers and the state, impeding sector development. Thus, it is necessary to find mechanisms to mitigate these risks. As demonstrated by the second hypothesis, agricultural insurance plays a crucial role in supporting sector development by providing financial compensation when needed, which helps mitigate losses and stabilize farmers' income, ensuring the renewal of their investment capacity and the general stability of the agricultural sector. Despite its importance, the lack of insurance culture among farmers has led to a low turnover in this branch, as confirmed by the third hypothesis.

This study leads to several findings:

- Insurance serves as a security strategy for decision-makers (farmers) to alleviate anxiety and fear of potential risks that could result in property loss.
- Uncertainty about the ability to face agricultural risks motivates policyholders to opt for insurance, with the agricultural insurance branch achieving approximately 40 billion DZD in turnover during the study years.
- Agricultural investors have various options for managing agricultural risks and different insurance policies with varying principles, mechanisms, and covered risks.
- Insurance that guarantees farmers' assets provides financial stability and encourages sector continuity, positively impacting the national economy.

- Agricultural insurance services in Algeria face numerous challenges, including the lack of accurate information on agricultural and livestock activities, farmers' lack of awareness of insurance benefits, and their reliance on state support.

Recommendations:

Based on the findings, the following recommendations are proposed:

- Continue efforts to raise awareness about insurance among all stakeholders, including policymakers and farmers. Improve the agricultural insurance system by learning from international experiences and developing a system based on scientific and objective principles for managing the insurance process from contract signing to compensation payment.
- Provide accurate statistics on plant and livestock activities in Algeria, including all related information and services provided for their protection. Identify risks and potential losses for each activity scientifically and update agricultural production statistics regularly, providing insurance companies with the necessary data to assess risks and set premiums accordingly.
- Simplify insurance procedures and conditions to make them easier for farmers to understand.
- Develop a national policy for preventing agricultural risks that threaten the sector annually, with incidents like the 2021 forest fires serving as a significant example. Given the current situation of fluctuating fuel prices, focus should be placed on the agricultural sector.

References

1. Tarek Abdel Aal Hamad, *Risk Management*, University Publishing House, Alexandria, Egypt, 2003, p. 16.
2. Nasheed Mahmoud Abdel Salam, *Risk Management*, Cairo University Center for Open Education, Cairo, Egypt, 2003, p. 6.
3. Samir Abdel Majid Radwan, *Financial Derivatives*, University Publishing House, Egypt, 2005, p. 51.
4. Mohamed Salahuddin Sidqi et al., *Commercial and Social Insurance*, Ain Shams Library, Cairo, Egypt, 2004, p. 15.
5. Mohamed Tawfiq Al-Balqeeni, Jamal Abdel Baki Wasef, *Principles of Risk Management and Insurance*, Arab Foundation for Sciences and Culture, 1st edition, Egypt, 2005, p. 17.
6. Osama Azmi Salam, Shuqairi Nouri Moussa, *Risk Management and Insurance*, 1st edition, Hamed Publishing and Distribution House, Amman, Jordan, 2007, p. 31.
7. Mokhtar Mahmoud El-Hans, Ibrahim Abdel Nabi Hamouda, *Introduction to Insurance Principles: Theory and Practice*, University Publishing House, Alexandria, Egypt, 2002, p. 17.
8. Mokhtar Mahmoud El-Hans, Ibrahim Abdel Nabi Hamouda, *Principles of Commercial and Social Insurance*, previously mentioned reference, p. 18.
9. Neil Crookford, *Introduction to Risk Management*, translated by Taysir Hamad Al-Treiki, Misbah Kamal, 3rd edition, 2007, p. 87.
10. Eid Ahmed Abu Bakr, Walid Ismail Al-Saifo, *Risk Management and Insurance*, Al-Yazouri Publishing House, Amman, Jordan, 2008, p. 38.
11. Article 49 of Order 95-04 issued on January 25, 1995, related to insurance.
12. Official Gazette, Issue 98, Article 5 of Order No. 72-64 dated December 2, 1972, which includes the establishment of agricultural cooperation.
13. Ramadan Abu Al-Saud, *Insurance Principles*, 2nd edition, University Printing House, Alexandria, 2000, p. 37.
14. Said Ahmed Suleiman, *Agricultural Insurance in Sudan: The Experience of an Agricultural Insurance Company*, Arab Organization for Agricultural Development, Egypt, 2009, p. 40.
15. Mohamed Abdel Karim Manhal, *Study of the Current Status of Agricultural Insurance Services and Their Development Potential in Iraq*, Arab League, Arab Organization for Agricultural Development, 2009, p. 04.
16. Official Gazette of the People's Democratic Republic of Algeria, Issue 13, Order No. 95-07 dated January 25, 1995, related to insurance.
17. Official Gazette of the People's Democratic Republic of Algeria, Issue 15, Law No. 06-04 dated February 20, 2006, amending and supplementing Order No. 07-95 dated January 25, 1995, related to insurance, Algeria, 2006, pp. 6-7.
18. Official Gazette of the People's Democratic Republic of Algeria, Issue 75, Executive Decree No. 07-364 dated November 28, 2007, regarding the organization of central administration in the Ministry of Finance, Algeria, 2007, p. 15.
19. Official Gazette of the People's Democratic Republic of Algeria, Issue 13, Order No. 95-07 dated January 25, 1995, related to insurance, pp. 35-36.
20. Official Gazette of the People's Democratic Republic of Algeria, Article 61 of Law No. 06-04 dated February 20, 2006, p. 13.
21. Official Gazette of the People's Democratic Republic of Algeria, Order No. 07-95 dated January 25, 1995, related to insurance, previously mentioned reference, pp. 31-32.
22. Article 233 of Order No. 07-95 dated January 25, 1995, related to insurance.

23. Mohamed Hussein Mansour, *Insurance Provisions*, New University Publishing House, Alexandria, 1999, p. 127.

24. Jean Bigot et al., *Treatise on Insurance Law*, Volume 03, Delta Edition, Paris, 2002, p. 370.

25. Official Gazette of the People's Democratic Republic of Algeria, Issue 13, Order No. 95-07 dated January 25, 1995, related to insurance.