

National food safety depends on the modernization and mechanization of agriculture

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Abstract:

Since independence, Algeria's economy has relied on the hydrocarbons sector, which represents 98% of the population. This has caused all economic indicators and national policies, whether development or related to the state budget, to be anchored directly to the figures for the export of gas and oil. Algeria has been unable, for more than half a century, to establish a diversified and affluent economy, in light of the dominance of the container economy, which is not immune from external crises and the requirements of the international market. Algeria is distinguished from the countries of the Mediterranean basin by its vast area, the diversity of its climate and environmental systems, and its unique geographical structure. This has made its space characterized by four climatic systems, from the Mediterranean in the north to the coastal climate in the far south. Climate diversity is logically related to the diversity of resources, ecosystems and agricultural products throughout the year. These natural advantages also allowed some products to be impersonated twice a year. All scientific experiments and economic approaches have reached the inevitable conclusion that we must modernize the agricultural sector through modernizing its structures, modernizing its production factors, and, in particular, introducing modern technology into all stages of the agricultural production process in its various divisions and specializations, and in various climatic regions.

Keywords: Food security. Economic indicators. agrarian economy. Livestock. Agricultural Growth. Mechanization.

1. Introduction

Digital economic indicators show that Algeria was unable, for more than half a century, to establish a diversified and wealth-generating economy under the dominance of the container economy, which is not immune from external crises and the requirements of the international market. and fierce competition for the rich countries' products.

Algeria is distinguished from the countries of the Mediterranean basin by its vast area, the diversity of its climate and environmental systems, and its unique geographical structure. This has made its space characterized by four climatic systems, from the Mediterranean in the north to the coastal climate in the far south. Climate diversity is logically related to the diversity of resources, ecosystems and agricultural products throughout the year. These natural advantages also allowed some products to be impersonated twice a year.

2. Algeria is an open agricultural space with unique resources

The estimated total agricultural areas are 42.5 million hectares, which represent only 18%, and this is a very low percentage compared to the total area, as the south and the plains are

almost unexploited or have taken on another non-agricultural character, although the prevailing theory of the south that is not suitable for agriculture is incorrect, as the south has become a farmer and contributes a large part to national production in various peoples. "The cultivated area is estimated at 8.5 million hectares, about 28 percent of the total agricultural area."

Farming in Algeria continued to rely primarily on rainfall before it developed through the introduction of protected agricultural technologies and the construction of irrigated areas, which constituted a major revolution in national agricultural production and contributed to a large number of quarterly products throughout the year on the one hand, and on the other, allowed for a production surplus which reached some exports and a drop in market prices for consumers, while causing some financial damage to the product in the absence of a rational policy to balance the complex economic process to protect all actors, including consumers, merchants and producers.

3. Mechanization and modern technology are essential to meet current economic challenges

The agricultural sector employs about 22% of the national labor force. There has been a great reluctance of labor during the last ten years for various reasons, the most important of which is the mass rural displacement witnessed in the Algerian countryside during the black decade, which made the rural space affected by a radical change in its basic components, which are driven by the individual or man. There is also a lack of appreciation for the hard manual farming work, which remains below the threshold in comparison to manual work and other professions. This is in addition to the problem of insurance and full-time work, which constituted a major obstacle for the agricultural sector as a whole, in light of the great deficit of modern mechanization and the introduction of technology in all agricultural operations and all the people on which the national agricultural sector is based.

Despite the resources mobilized, whether in the form of financial support in the form of various agricultural loans or human resources, through a rational policy of training, research and guidance, the Algerian farmer is still far from the objective of modernization and mechanization, which is considered a fundamental factor for the advancement of the productive agricultural sector and a true guarantor of national food security.

Modernization of the sector in Algeria has become more than necessary, not only in order to raise the levels of production and productivity per hectare, but also to face the challenges of the new millennium, to reduce the costs of production and to confront the competition of the neighboring countries, especially the Mediterranean countries, which have begun to produce agricultural products and export them, and sell them at a price lower than the national product. This is necessarily due to the reduction in the cost of production in these countries, due to the modernization that has been followed in all agricultural and production processes and in all people.

It is noteworthy that the current status of the sector is modest compared to neighboring countries and the Mediterranean countries, which enjoy the same climate composition and the same diversity of resources, especially the Maghrebi countries that have taken giant steps in the field of mechanization, the introduction of accurate and intelligent technology, and the modernization of agriculture in general.

Among the mechanisms of mechanizing and modernizing agriculture, we can give examples in all agricultural operations, such as plowing, planting and harvesting of crops and the

maintenance of various plants during their biological cycle, as well as in the use of pesticides and fertilizers, which remain in a traditional form that does not reflect the aspirations of the sector and does not guarantee our farmers guaranteed continuity and high productivity in light of the fierce competition experienced by the world of agriculture, which is directly linked to microtechnology.

Among the examples that could be the scene of modernity are the Algerian agricultural machines, which have not undergone significant changes since the seventies. Despite their good quality and strength, they remain weak in terms of equipment and modernization, relying on mechanical strength rather than smart technological power, which has become an unavoidable necessity. This is also the case with the auxiliary machines, which are limited to mechanical machines that do not meet the requirements of modern agriculture. The agricultural industry has been restricted to installing tractors and their appendices, or traditional harvesting machines. The rest is imported in hard currency, despite the experience and competence of the Algerian factory in the field. Agricultural machinery has become an area through which hard currency is depleted due to heavy imports. The agricultural equipment bill is estimated at more than \$500 million, and the food bill, according to Ministry of Finance statistics, is more than \$1 billion a year.

Even the workshops that were approved were restricted to installation and marketing, as was the case with cars, which constituted a real obstacle to the development of agricultural mechanics in Algeria.

In addition to importing seeds, fertilizers, and pesticides of all kinds, the import bill has burdened the national economy in light of the inability of the traditional local mechanical industry to keep up with the smart technological revolution and thus the inability to meet the requirements of Algerian agriculture, which has undergone a great transformation during the last two decades.

4. The need to rely on mechanization and artificial intelligence to keep up with the challenges of the stage

The modernization of our agricultural sector is not limited to the introduction of agricultural machinery to cover agricultural operations. It is related to plant and animal production, to techniques for the management of water resources, and to the land receptacle, the cleansing of which remains an urgent desire of producers and investors alike. It is also related to the introduction of artificial intelligence in the management of available resources, such as irrigated land, forest cover, and agricultural and environmental production systems, the preservation of which is closely linked to agriculture.

The challenge of the new millennium in agriculture is based primarily on the management of water resources, which have become scarce, both surface and underground, especially non-renewable. This calls for the adoption of high technologies in the field of artificial intelligence and the introduction of models appropriate to each climate system and to the Division of Practice and the nature of the soil... The requirements and specificities of each field transplant.

The introduction of large agricultural machinery (half-manufactured) has become necessary, especially in medium and large investors, in order to effectively control production costs and quickly prepare the transformation steps that must be synchronized with agricultural systems in order to optimize the agricultural activities and their products. Reducing production costs through the introduction of modern and smart technology will allow our farmers to be

competitive in the economic transformations of the economic and social sphere. In addition, the introduction of technology allows for the rational and efficient use of available natural resources, such as water and soil, and the maintenance of necessary fertility levels, thereby contributing to a reduction in the excessive return of organic fertilizers and chemical pesticides.

5. Passage from a productive to an export-priced farm as a source of hard currency and the creation of wealth by the development of manufacturing and food industries has become an imposed imperative

One of the most effective and effective policies that allow for keeping pace with all the agricultural people, is the strategy of developing the manufacturing and food industries on the national level, which allows for the direct evaluation of the national product, the creation of wealth and jobs, and raising the consumption levels of the Algerian individual, and consequently the recovery of the national economy. In light of the weakness or absence of manufacturing industries, the national product will continue to face major challenges and risks from the economic and marketing aspects. This will have a negative impact on farmers and the people, since not all products can be absorbed by consumers. This will lead to a major recession, especially with regard to the limited private sector and its storage capabilities, and the lack of investment in this field, especially in the inland regions and in the south.

It is currently observed that most of our agricultural products are consumed directly in their raw form and at low prices, in the absence of manufacturing industries, which, if available, would play a valuable role for the product by creating wealth and a very effective marketing and economic budget to protect farmers and encourage them to produce strongly. One kilogram of potatoes, for example, is sold for 30 dinars in its raw form. It can also be sold for 3,000 dinars, which is converted into other by-products and derivatives. Through this chain, it will create jobs and help to absorb a large part of the surplus in the market.

6. Modern mechanization and technology are essential in desert production systems to reduce high production costs

In light of the unprecedented prosperity and development of desert agriculture and the remarkable success of some people, such as vegetables and some grains, legumes and fruit trees, agriculture in desert areas depends mainly on groundwater and non-renewable artesian wells, in addition to consuming electric power and fertilizers due to soil poverty and infertility.

Artificial intelligence technologies can take their place in large-scale investments in irrigation, in a water economy in planted areas, and in large-scale exploitation of solar energy for electricity production. So we can imagine farmers investing in energy-self-financing deserts, and using smart agricultural machines that help turn products on the spot to solve logistics and to the distance from consumption centers like big cities and export ports.

This integrated strategy can be contributed by all sectors to make agriculture in the South successful and more competitive nationally and internationally.

7. Conclusion

Finally, the diversification of the national economy, which is currently dependent on fuel, can only be achieved through the concerted efforts of all sectors, in accordance with integrated and coordinated frameworks, especially in the field of scientific research and innovation. The recent serious steps taken by the Ministry of Agriculture to establish new research units are

evidence of the new trend that the next two decades will witness, as well as the strengthening of coordination with the higher education sector, which must play a pivotal role in the field of training, scientific research and guidance. This represents a new and renewed strategy to exploit the results of research and apply them in the field to benefit the agricultural sector and the national economy as a whole.

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