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Peri-Urban and Urban Agriculture in Constantine, Algeria

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Abstract
This study focuses on the metropolitan area of Constantine, a territory of regional attraction, capable of stimulating the development of the wilaya in the coming years thanks to a diversified and multifunctional peri-urban agriculture. The study is based on a questionnaire survey carried out throughout the study area. Specifically in the municipalities of Hamma and Khroub, the results show that, despite the progression of urbanization, the Constantine Urban Group contributes 37% of the total production of the wilaya in 2022. This production is characterized by a certain diversity: cereal crops, market gardening and arboriculture are the pillars of agriculture in Constantine. Beyond its primary vocation, this agriculture contributes to the attractiveness of territories and landscapes that reflect the image of the city, to the management and protection of natural resources, while shaping rural landscapes".
Keywords: Peri-urban agriculture; Greater Constantine; Khroub; diversity; urbanization.

1. Introduction

Research is paying increasing attention to peri-urban agriculture due to its growing importance. This agriculture, with its diverse production systems, is characterized by its location close to the city and its connection to the urban economy (FAO,2020). This agriculture, which has existed since the dawn of cities, faces multiple conflicts with urban sprawl, especially in terms of access to resources. Peri-urban agriculture in the areas surrounding cities represents a tremendous potential for regional development (Al Tarawneh, W. M. (2014).) . It is a valuable resource for the region and a source of wealth if managed and maintained properly. Over the past two decades, Peri-urban agriculture has been recognized as a multi-functional activity that goes beyond simply meeting food production needs. The multi functionality of Peri-urban agriculture is not a new concept in itself, as agriculture has always played multiple roles. However, over time, we have witnessed a significant development in the form of official recognition of this multi functionality and its integration into development projects, whether urban or agricultural (CFS 2012) . The multi functionality of Peri-urban agriculture is closely linked to the needs of urban populations, giving it a new dimension (Bednář, M., & Šarapatka, B. (2018). to the importance of recognizing the multi functionality of peri-urban agriculture in urban planning policies. This results in a radical change in the governance of this agriculture, including the content of development projects and the decision-making process, with the emergence of new stakeholders and the development of consultation procedures (FAO,2020).. Peri-urban agriculture is an essential element in the sustainable development of cities and their surrounding areas. Recognizing its multi functionality and integrating it into urban planning policies is essential to ensure its optimal use to achieve economic, social, and environmental.

The phenomenon of rural exodus towards large cities is a characteristic of the developing world. Predictions suggest that by the middle of the 21st century, 70% of humans will reside in cities (Damon, 2011). This projection, highlighted by the United Nations and echoed in academic discourse, underscores the significance of urban dynamics. The physical growth and expansion of urban areas are expressed through the extensive footprint of their built environments (Monnet, 1997). Urban expansion often spreads out uniformly, resulting in a pervasive spread known as urban sprawl (Antoni & Youssoufi, 2007). This sprawl often encroaches upon peri-urban areas near cities, which are often agricultural lands (Hasse & Lathrop, 2003). Urban sprawl is often characterized by a particular type of urban growth featuring low-density and dispersed development with significant environmental and societal impacts (Hasse & Lathrop, 2003). While some research has highlighted the detrimental consequences of urban sprawl (Kahn, 2000; Freeman, 2001), others have pointed to its potential advantages (Damon, 2011). The phenomenon of urban sprawl is an integral aspect of urbanization, influenced by factors including population increase, industrial advancement, and the decline of rural areas and agricultural activities over the past hundred years. With climate change, food production is becoming increasingly affected by climate on one hand and urban sprawl on the other.

In recent studies, there has been renewed interest in the topic of urban dynamics and functional changes in urban peripheries, as well as urban sprawl at the expense of agricultural land, especially in relation to urban production and its systems (Arab & Dang Vu, 2019). Definitions of the city are evolving in terms of scale and function, with the emergence of new megacities that integrate their surroundings and redefine the relationships between city centers and their outskirts (Bord,1981).

Amidst these transformations, the issue of housing in peri-urban areas on the outskirts of cities has become increasingly prominent**.** However, there are also other emerging urban concerns that are shaping the development of new urban spaces. These include transitions in energy, agriculture, the environment, digital advancements, demographic shifts such as migration, and the interplay between health and urban living (Arab & Dang Vu, 2019).

Given these changes, it is crucial to revisit and refine the visions and methodologies for addressing urban development**.** In this context, the paper "The Role of Actor-System Approaches in Analyzing Urban Production Shifts" by Dr. Asia Lifa at the international conference on climate change and natural hazards in the Arab world in October 2021 addresses the role of actor-system approaches in analyzing urban production shifts. Considering urban production methodologies is of paramount importance, as it highlights the future of urban expansion at the expense of agricultural land and the climate issue, which hinders food production (Arab Democratic Center, 2021).

Peri-urban areas located on the outskirts of cities have suffered for decades from a number of ills due to a long process of accelerated urbanization in order to meet the needs of a strong population growth. In an effort to resolve the obstacles hindering its development, several researchers from different disciplines have become interested in the question of peri-urban agriculture, (Bousmaha, A., & Boulkaibet, A. 2019) "that which is located on the outskirts of the city, whatever the nature of its production systems. With the city, this agriculture may either have only neighborly relations or maintain reciprocal functional relations" (Fleury, 1997; Donadieu, 1997). Indeed, a significant body of literature is devoted to this issue (Fleury, Donadieu, 1997; Poulot, 2012; Aubry, Pourias; 2013;), viewed from both different and complementary angles. Multifunctionality in a perspective of sustainability was a subject of study for industrialized countries (Fleury, 1997; Donadieu, 1997). For developing countries, research has been limited mainly to the primary food function or to the issue of agricultural land, as illustrated by numerous examples: Argentina (Duvernoy, Lorda, 2012), Lebanon (Verdeil, 2004) and Senegal (BA, Cantoreggi, 2018).. In Algeria, research has focused on the land issue, as evoked by (O. Bendjaballah Boudemagh 2013) in his article published "Urban policies, agricultural land and the land market: what future for peri-urban agriculture in Constantine (Algeria)? ", the conflictual relationship that characterizes the link between urban/rural and city/countryside, for example, the article published by(B. Semmoud and A. Ladhem 2015) "Peri-urban agriculture facing land vulnerabilities in Algeria", as well as on the aggressions exerted on peri-urban spaces called by some "intermediate spaces", while, according to Poulot, "it is just as much 'other city as other countryside

Constantine, the metropolis of the eastern Algerian region, occupies a central position in this region, which is considered a major basin of life. It constitutes a population, spatial and functional center of gravity that has experienced strong demographic growth since independence, as well as the arrival of significant population flows from various neighboring wilaya, attracted by its geographical location in the middle of the two North-South and East-West highway axes, its administrative and economic weight, the presence of weekly markets and industrial zones, and its scientific and cultural weight. These characteristics make the wilaya of Constantine a center of convergence and even a metropolis. With 943,112 inhabitants (Google Arts et Culture, 2015) in 2015, "Greater Constantine" represents a highly concentrated urban center, the third largest in the country after the capital and Oran.

The wilaya of Constantine is characterized by diverse agricultural land, with its northern lands irrigated and dedicated to vegetables and fruit trees, and its southern municipalities' lands dedicated to extensive agriculture. 79.56% of the agricultural areas are suitable for cultivation (DSA de Constantine,2022) and consist of lands with high agricultural potential in the plain of Haut Rhumel (Ain Smara), the plain of Bas Rhumel Hamma Bouziane, Ibn Ziad and Messaoud Boudjeriou), and the plain of Boumerzoug (Khroub, O.Rahmoune). Like other cities in the country, Constantine has suffered for many long years from uncontrolled and anarchic urbanization, especially after the liberalization of the real estate market in 1990, which led to the saturation of its urban fabric. (Lifa, 2024) It followed a growth process typical of most Algerian cities, as described by (Côte, 2006): "The Algerian city was built in successive halos, each era achieving the previous one. Around the urban nucleus - whether the old city or the colonial checkerboard - colonial suburbs developed around them, the war period covered the spontaneous suburbs built by the rural people fleeing the countryside; finally, the current era overflows them with the new suburbs of state initiative or self-construction" Côte. Today Constantine is suffering from a major urban crisis (Louafi, O. 2019). Therefore, the main challenge in the field of agriculture is urban expansion at the expense of its land, and rural real estate has become a source of tension between two competing worlds, the rural world and the urban world, and unfortunately they differ in dynamics (Lifa, 2024). The urban expansion and sprawl of Constantine has led to the loss of large areas of agricultural land, which is the food production basket and the preservation of the environment. Conflicts often arise between farmers and urban dwellers over land use. Farmers want to continue using the land for agriculture, (Yousafzai, S., Saeed, R., Rahman, G., & Farish, S. 2022). while urban dwellers want to use it for housing, businesses, and other purposes. It is becoming increasingly difficult for farmers to make a living in peri-urban areas. This is due to a number of factors, including the loss of agricultural land, the rising cost of inputs, and the competition from imported food. (Yussif, K., Dompreh, E. B., & Gasparatos, A. 2023).

Through this article, we wanted to highlight a comprehensive approach to address the challenges facing agriculture in peri-urban Constantine. There is a need to support farmers in adopting sustainable agricultural practices that can help increase productivity and protect the environment.

- **Promoting urban-rural collaboration:** There is a need to promote collaboration between urban dwellers and farmers to find mutually beneficial solutions to the challenges facing agriculture in peri-urban areas.
- **Developing land-use policies:** There is a need to develop land-use policies that balance the needs of both urban and rural communities. By taking these steps, it is possible to create a more sustainable and equitable future for agriculture in peri-urban Constantine.

2-Study area and methodology

Constantine is a city located in the Southeastern part of the Mediterranean basin, more precisely 390 km from the capital Algiers (Figure 1).

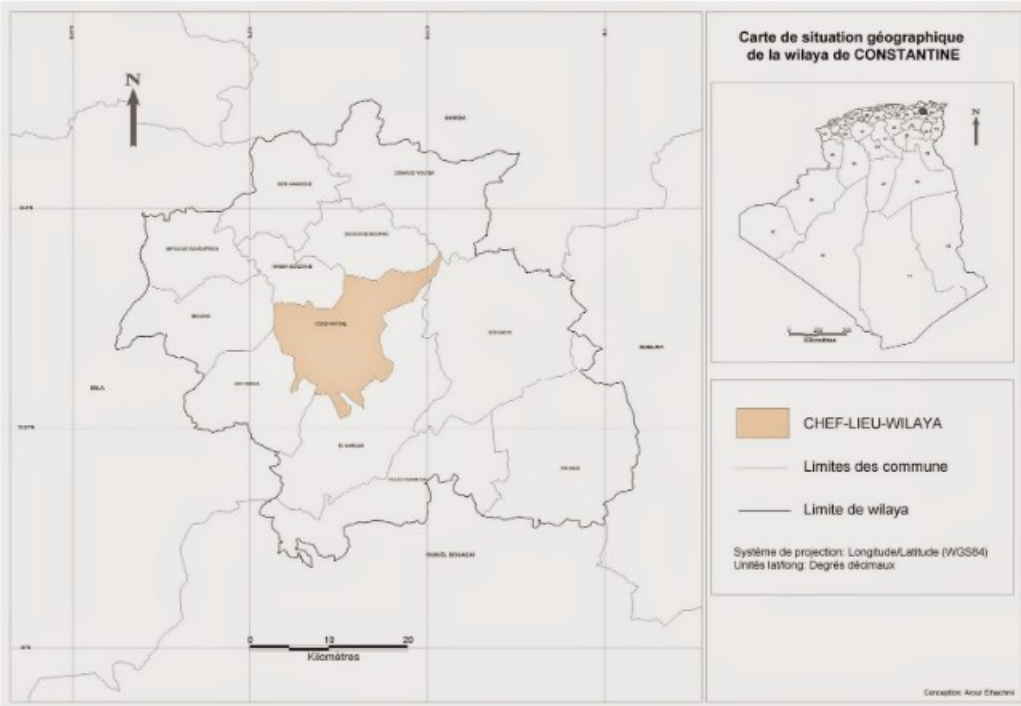

Figure 01: localization from Constantine.

The site of Constantine is characterized by physical constraints (steep slopes, landslide-prone areas, etc.) that mean any urban development requiring land must take place outside the city limits. Its privileged central position, 430 kilometers from the capital and 80 kilometers from the sea, allows the wilaya to spread over an area of 2,297.20 km², representing 0.09% of the country's total surface area, since the last administrative division in 1984.The wilaya of Constantine is characterized by a varied relief (Benidir, F. 2003)., generally mountainous and rugged. It is part of the Tell Atlas and is characterized by three distinct major physical ensembles:

- **Tell Ensemble:** Extends practically over the entire northern part of the wilaya. This ensemble is characterized by a very rugged compact relief, composed of mountains and hills with steep slopes. This part is illustrated by the mountains located in the extreme north of the wilaya, including Djebel Chettaba, Djebel Oum Settar, Djebel El Ouahch and Sidi Driss.
- **High Plains Ensemble:** The High Plains are located in the southeast of the wilaya, stretching from the Tell Atlas in the north to the Saharan Atlas in the south. These High Plains are vast flat expanses, interspersed with isolated massifs sometimes reaching up to 900 meters in altitude. These lands are generally reserved for cereals and fallow land because they are made up of red and brown soil from middle and recent Quaternary ice. Between these two physical ensembles mentioned above, lies the Hamma Bouziane (figure 06) Basin, which marks the boundary between the inner Tell massifs and the beginning of the High Plains.
- **Interior Basins Ensemble:** These relief forms are characteristic of the Neogene basin of Constantine, which extends from Ferdjioua in the west to Zighoud Youcef in the east and is limited by the High Plains in the south. The Rhumel and Boumerzoug valleys, which intersect the Constantine basin, narrow in some places but take on a more or less significant width between 200 and 300 meters. The hydrographic network of the wilaya of Constantine is composed of several Oueds and ravines. The most important are:
- **Oued Rhumel:** Runs along Djebel Zouaoui to Constantine and then heads towards
- **Oued Boumerzoug:** Belongs to the Rhumel basin. These two important Oueds drain the Kébir Rhumel basin. They participate in the channeling of permanent waters. More or less important ravines drain periodic waters mainly of pluvial origin. Constantine has a continental climate with dry summers and harsh winters. A phenomenon justified by the presence of the northern massifs which prevent the passage of sea air, thus depriving the wilaya of the Mediterranean-type climate, despite being located about 80 kilometers from the sea. The south of the wilaya is characterized by a semi-arid climate with very varied temperature ranges; whose rainfall in this area is practically low, and varies between 350 and 500 mm. On the other hand, the climate is semi-continental in the north, where rainfall is much more significant, between 500 and 600 mm, reaching up to 1000 mm in the wettest stages **(figure 02).** The Hamma Bouziane basin, for its part, benefits from a particular microclimate with a milder temperature and higher rainfall, due to its location in a basin. The temperature in

Constantine is marked by seasonal and daily variations; monthly minimum average 2.4°C, monthly maximum average 34.2°C, with an annual average of 18°C.

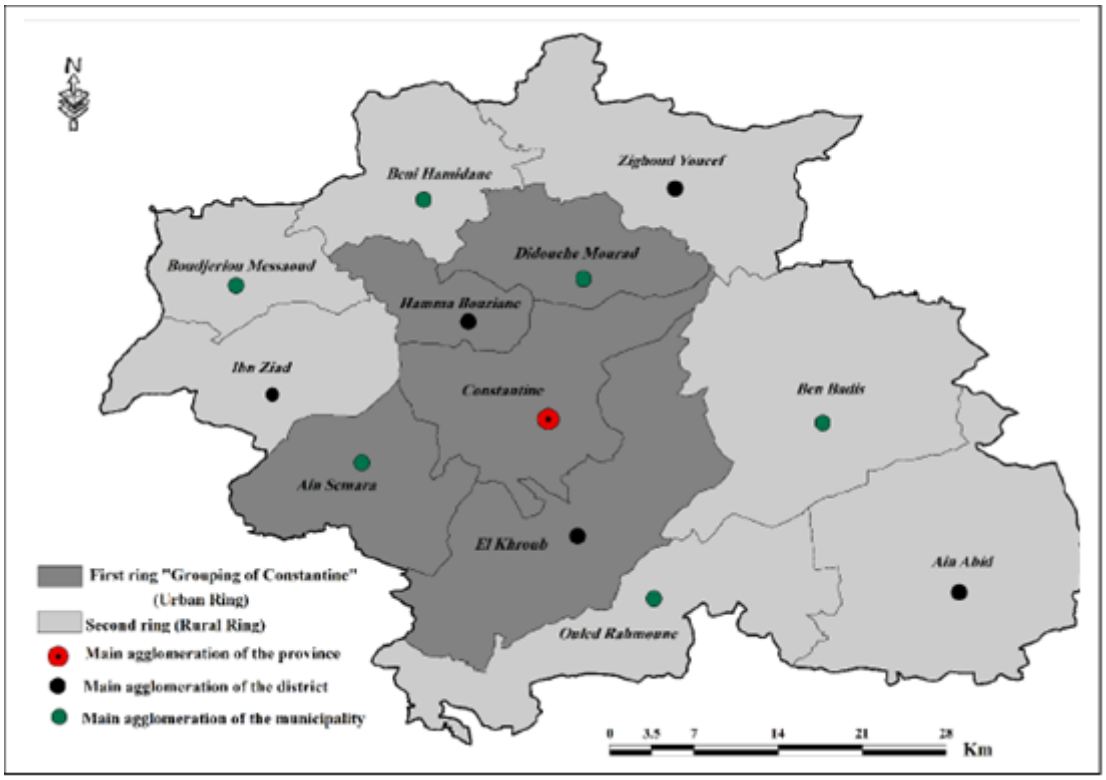

Figure 02: The perimeter of the first and second rings of the province of Constantine (Debabi,bouteche,2023).

In this article, the analysis of land tenure for the expansion of the Greater Constantine agglomeration is based on a social geography approach. Like the other human and social sciences, this discipline mobilizes a variety of survey and data processing techniques (photography, archives, cartographic documents, academic works, recorded interviews, press articles, statistics, etc.) which provide both qualitative and quantitative information (Blanchard, Estebanez, & Ripoll, 2021).For our research, we envisaged a combination of three analysis tools:

- **The first tool is based on the exploration of works carried out on Constantine in different supports (master's theses, doctoral theses, scientific articles, journalistic articles, reports of research offices, final reports of the different development plans, press clippings, etc.).** Our documentary research focused on themes that are inseparable from land tenure such as urban sprawl, peri-urbanisation, and agriculture in rural areas, land tenure changes in independent Algeria, the town/country relationship, and peri-urban agriculture, among others. From these readings, it was clear that the land question remains an underlying factor of analysis. However, this has not prevented the scientific community from noting the shortcomings in land management, particularly in the peri-urban areas. All the studies draw up an assessment exacerbated by the failure of urban planning tools and the sectoral conception of planning and development of territories in Algeria.
- **The second tool uses a spatio-temporal analysis of the agricultural and urban areas of the Greater Constantine agglomeration.** Mapping has enabled us to identify the evolution of urbanised land and land use in the peri-urban areas of Constantine. This situation was drawn up based on graphic documents made, essentially, by design offices (within the framework of the realization of the PDAU1 and the POS2), university works (doctoral thesis, dissertation, etc.) and satellite images. To map the current urban sprawl in our study area, we used remote sensing data available in the USGS GOV (Earth Explorer) archives. To do this, we used the Land Sat 8 images (LDCM with a spatial resolution of 15 m). The images were selected in such a way that their quality, in terms of the time of year and the presence of clouds, was as good as possible for identifying and distinguishing urban development in the Constantine region. We used the functions offered by QGIS 3.22 (SCP: Semi-Automatic Classification Plugin) to recalibrate and improve the resolution of the images. A supervised 'maximum likelihood' classification of the coloured composition (4-3-2) was carried out to identify the land cover classes representing the built environment.
- **The third and final tool was the field survey in the Urban Grouping of Constantine (GUO), which was made up of 5 municipalities: Constantine, Khroub, Ain Smara, Hamma Bouziane and Didouche Mourad.** For our article, we have chosen to conduct our investigations in the municipality of Khroub. This choice is justified by the land pressure experienced in this municipality due to its proximity to the city of Constantine, as well as the speed with which this territory has been built since the 1990s. We conducted twenty semi-structured interviews with actors whose role was

decisive, either in the process of producing urban soils or in the application of policies for the preservation of agricultural land. Our interviews were conducted with the assistance of key informants, working in public institutions concerned with urban planning and land governance. These include the state studies office specializing in urban and territory planning studies as well as, several administrative services of the wilaya of Constantine such as the Directorate of Urban Planning and Construction (URBACO,2008), the Directorate of Agricultural Services (DSA,2020), the Regional Directorate of the Cadaster and the department of agricultural land of the Directorate of Domains.

.Constantine is the interior metropolis of eastern Algeria, with a population of over 930,000 people, according to the last general population and housing census (ONS, 2011). Despite its restricted area compared to other provinces of the country (2229.10 km2), it has significant agricultural potential. It has a total agricultural surface estimated in 1987 at 198,570 hectares, which represents 89% of the province's total surface. 82,000 hectares of this surface are agricultural lands with high potential, of which 5,000 hectares have extremely high agricultural potential (BNEDER, 1988).The city's urban development is carried out in two distinct rings, as shown below (Figure 2).The first ring includes five urban municipalities (the grouping of Constantine) and contains 84% of the province's population (according to the last general population and housing census of 2008). At this scale, peri-urbanization and urban sprawl on agricultural lands are most visible. The second ring is made up of seven rural municipalities. It is home to 16% of the province's population and is less affected by urban encroachment on agricultural land. However, it is not completely out of the woods for the foreseeable future.Despite being less affected by urban sprawl, the second ring is starting to experience the overflow of Constantine's population in the form of new urban poles, such as the urban pole of Ain Abid. This phenomenon is likely to intensify in the coming years, as Constantine continues to grow and expand(Lifa,2024).

3. Results

The relationship between the city and the countryside in Constantine is one of mutual dependence. The countryside serves the city by providing it with food and other goods. In return, the countryside benefits from the services that the city offers. This exchange is beneficial to the development of both the city and the countryside. The population of the wilaya (province) is concentrated in Greater Constantine (80%). Urbanization has spilled over from the city of Constantine and its satellites into the surrounding agricultural territory (O. Bendjaballah Boudemagh 2013).After independence, the relationship between the city and the countryside began to change. The rural area on the outskirts of Constantine, with its many advantages, quickly became of interest to planners. It became the target of a significant investment policy and the recipient of local, regional, and even national infrastructure projects. The rapid urbanization of Constantine has triggered conflicts between urban and rural spaces, agricultural spaces and urban and industrial spaces, in an area where the boundaries have become blurred. Today, it has become necessary to redraw not only the boundaries of each space but also to redefine the properties of each, to assign each its role, in order to better protect the agricultural landscape, curb sprawl, and design appropriate development in a context of permanent urbanization.Despite the crisis affecting agricultural land, Greater Constantine has managed to preserve its food and economic function. In 2017, the Urban Grouping of Constantine contributed 34.9% to the wilaya's total production, compared to 33.7% in 1989 and 43% in 1999 (DSA de Constantine,2022). It still has a significant area of grazing land and forests, allowing it to develop other complementary sectors such as cattle and sheep breeding, poultry farming, beekeeping, etc.According to statistics, production declined during the previous decade due to a lack of rainfall. Between 2014 and 2016, for example, this was particularly evident in the case of field crops, whose lands suffered from severe drought. However, in 2017 and 2018, production witnessed a remarkable increase, with nearly 1.8 quintals of cereal production.

For plant crops, cereal cultivation, market gardening, and arboriculture are the mainstays of agriculture in Constantine. Greater Constantine contributes to the wilaya's total plant production with 38.98% in 1999 and 33.44% in 2014 (DSA de Constantine,2022) (Figure 03).

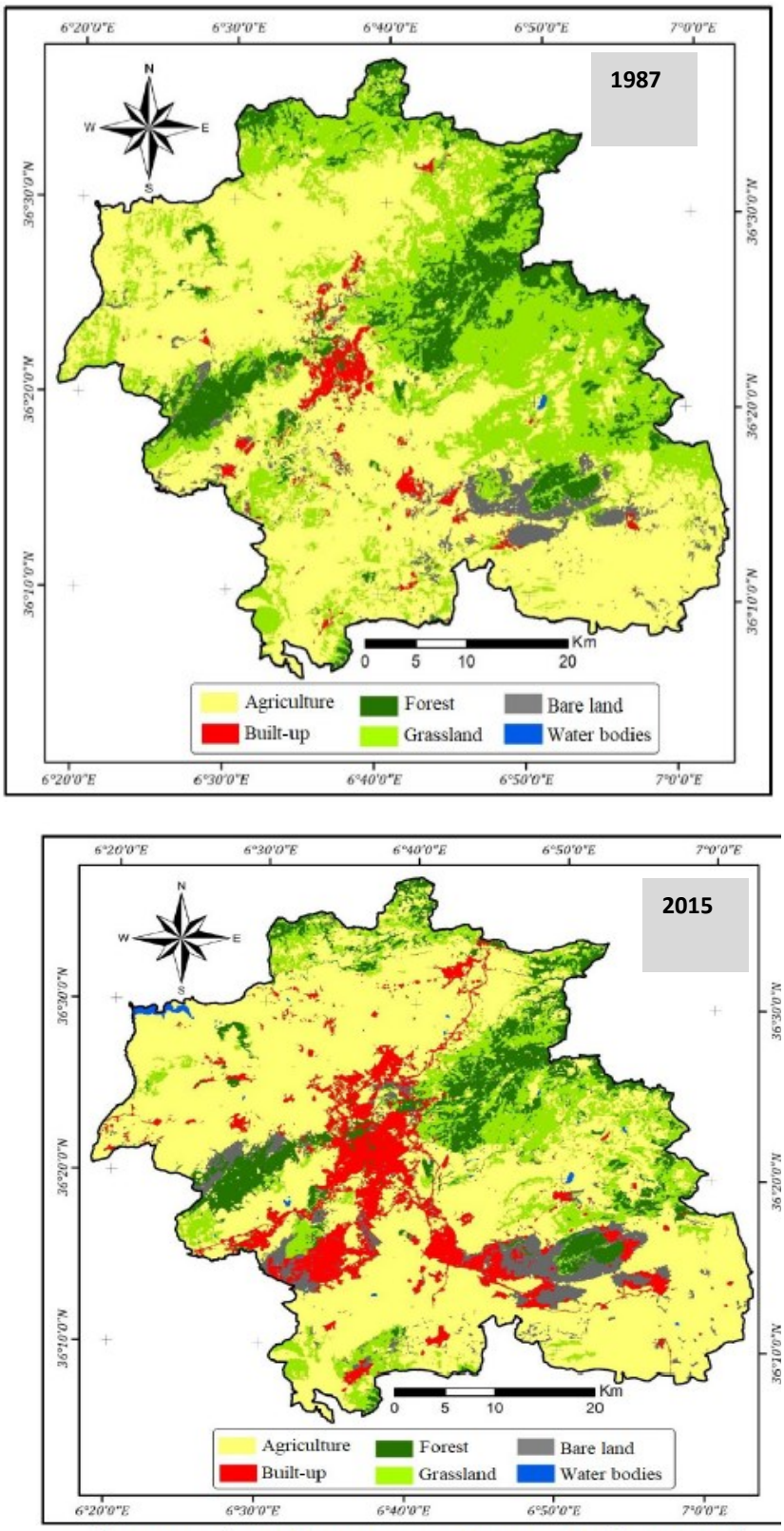

Figure 6. Land use of Constantine province in 2015 (Gana, 2018).

Figure 03: Land use of Constantine province in 1987 and 2015(Gana, 2018)

Constantine, like many cities around the world, has experienced rapid urban growth in recent decades. This surge in demand for land has led to the emergence of two distinct real estate markets: one for state-owned land designated for construction, where prices are relatively low, and another for privately owned land, where prices are significantly higher. This situation has prompted landowners to seek ways to integrate their properties into the urban landscape, either for urban expansion or for the construction of individual homes on agricultural land, a phenomenon known as unplanned urban sprawl.In contrast to the thriving real estate markets, the agricultural sector, traditionally reliant on cereal cultivation and organized through national networks for inputs, advisory services, and marketing, has failed to establish strong alliances with the city. This has resulted in immense pressure on agricultural land, leading to the displacement of farmers who lack land tenure security. As agriculture remains heavily dependent on state concessions and allotments, building a dynamic and sustainable urban agriculture requires addressing the issue of access to land resources.
The factors linking cities to urban agriculture through the real estate market are common across countries and national contexts. However, the Algerian case uniquely embodies this relationship, as it unfolds within a legal and historical framework that has made the state a key player in the market: it owns a significant portion of agricultural land and plots designated for construction. The political choice to promote private ownership through managed sales has led to real estate speculation, indirectly impacting the investment potential and sustainability of urban agriculture. Consequently, the reorganization of the urban market, which seems essential for preserving agriculture, must take into account agricultural constraints.

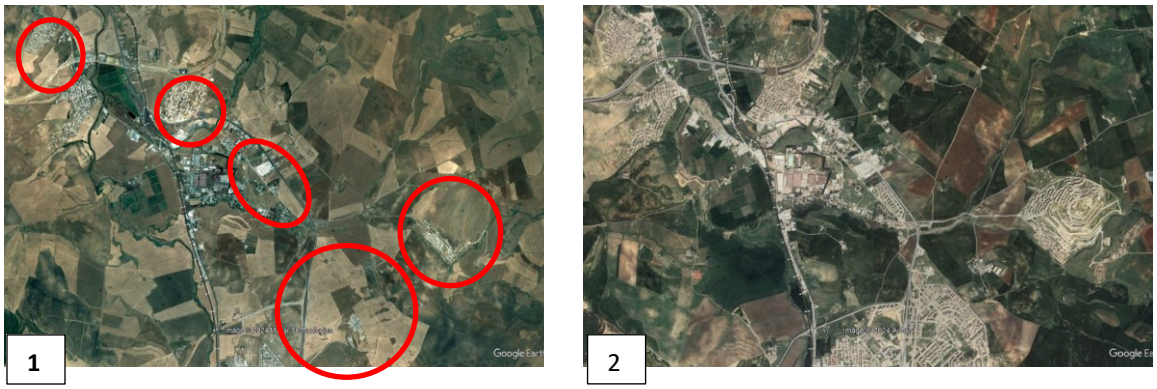

Figure 04: Urban sprawl of El Khroub at the expense of agricultural land
1: Khroub in 2010
2:Khroub in 2024

Constantine: A Microcosm of Urban-Agricultural Dynamics

The wilaya of Constantine serves as a stark example of how real estate market dynamics influence agriculture in urban areas. Effectively reorganizing this market, while considering the needs of both urban and agricultural stakeholders, is crucial to protecting the future of urban agriculture and ensuring its sustainability. The relationship between urban growth and agriculture is complex and multifaceted (figure….). In Constantine, the dynamics of two distinct real estate markets, coupled with the lack of strong urban-agricultural alliances, have placed immense pressure on agricultural land. Addressing this challenge requires a comprehensive approach that considers the legal, historical, and economic factors shaping the relationship between cities and their surrounding agricultural landscapes. By prioritizing sustainable land use practices and fostering collaboration between urban and agricultural stakeholders, cities like Constantine can ensure a harmonious coexistence between urban development and agricultural productivity (figure..). Agriculture, beyond being a primary source of food production, holds immense significance in today's world. It offers solutions to some of the most pressing environmental and social challenges we face. As a cornerstone of economic development, contributing to sustainable development goals like food security, poverty reduction, and rural development, agriculture must be prioritized in both developed and developing nations to ensure food security for present and future generations.

Figure 5: Urban sprawl of Hamma Bouziane at the expense of agricultural land

Figure 6: Aerial photo of the urban sprawl of Hama Bouziane at the expense of the most fertile irrigated agricultural land in 14 years

1: Hamma Bouziane in 2010

2: Hamma Bouziane 2024

5. Conclusions

From cities to rural areas, agriculture forms an essential component of the landscape, particularly in peri-urban spaces. It serves as a resource and a source of wealth for these areas when managed and nurtured effectively. Given its importance, agriculture is recognized in many countries as a multifunctional activity, extending beyond its role in meeting production demands. This multifaceted nature is not a new concept, as agriculture has always played diverse roles. For peri-urban agriculture, this multi functionality is often linked to the needs of urban populations, giving this form of agriculture a new dimension.

-Peri-urban agriculture has taken center stage in the regional development process, particularly in developed countries. However, these peri-urban areas face ongoing conflicts regarding land use in rural areas: Should they preserve their natural beauty unaltered, or should they evolve and adapt to societal needs?
-The future prospects of peri-urban agriculture, whether in developing or developed countries, hinge on its current state, which some perceive as deteriorating while others view it as holding immense potential. In southern countries, the number of individuals drawn to this profession is declining sharply. Master plans are rarely developed, leading to uncontrolled urban sprawl at the expense of agricultural land.
-Despite facing significant challenges, peri-urban agriculture presents tremendous opportunities to enhance quality of life and protect the environment. By investing in this form of agriculture and developing sustainable practices, we can secure a safer and more sustainable future for generations to come.

Encroachments on Agricultural Land in Constantine: A Threat to Food Security and Sustainable Development

Agricultural land in Constantine faces continuous encroachments, posing a severe threat to food security and sustainable development in the region. Despite the Algerian government's recognition of this strategic sector's importance, the phenomenon of land grabbing and conversion for other uses remains widespread.

Agricultural land is a precious natural resource, forming the foundation for food production, providing employment opportunities, and contributing to environmental balance. Therefore, the Algerian government places great emphasis on protecting this land through enacting laws and regulations, implementing programs, and initiating projects aimed at developing the agricultural sector.

Despite the efforts made, agricultural land in Constantine faces numerous challenges, including:

- **Rapid population growth:** Population growth increases land demand, encouraging the conversion of agricultural land to residential, commercial, and industrial uses.
- **Unplanned urban sprawl:** The Greater Constantine area is experiencing rapid urban expansion, leading to the loss of vast amounts of agricultural land.
- **Climate change:** Climate change phenomena, such as drought and desertification, threaten agricultural productivity and lead to the loss of arable land.
- **Weak infrastructure:** Many agricultural areas suffer from poor infrastructure, including roads, irrigation, and sanitation, hindering the development of the agricultural sector.

Encroachments on agricultural land have several detrimental consequences, including:

- **Reduced agricultural production:** Loss of agricultural land leads to decreased agricultural production, jeopardizing the country's food security.
- **Rising food prices:** Declining production causes food prices to soar, placing a burden on citizens.
- **Increased unemployment:** Job losses in the agricultural sector contribute to rising unemployment, particularly among youth.
- **Environmental degradation:** Conversion of agricultural land to other uses leads to environmental degradation, such as biodiversity loss and increased soil and water pollution.

Proposed Solutions:

To overcome the challenges faced by agricultural land, a range of measures must be implemented, including:

- Strict enforcement of laws and regulations related to agricultural land protection.
- Supporting farmers and encouraging them to invest in the agricultural sector.
- Developing infrastructure in agricultural areas.
- Raising awareness about the importance of agricultural land and its protection.
- Implementing sound urban planning that considers the preservation of agricultural land.

Protecting agricultural land is a shared responsibility of both the government and society. Therefore, concerted efforts are crucial to combat encroachments on this precious natural resource and ensure the sustainability of the agricultural sector in Constantine.

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