



وزارة التعليم العالي والبحث العلمي  
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# مجلة ميسان للدراسات الاكاديمية

للعلوم التطبيقية والانسانية

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## Urban Sprawl of Agricultural Areas in Amara City

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### Abstract

Urban sprawl against the agricultural lands is considered one of the most important problems resulted from the swift housing growth in the developing states, for the agricultural lands are exposed to pressures and erosion as a result of this sprawl, urbanization process and weakness of deterrent laws. The Amara City had witnessed a noticed growth in averages of housing as a result of development requirements, population in the city rose from 272286 persons in 1997 to 577543 persons in 2020, and consequently caused settlement of numbers of inhabitants in the agricultural zones and changed plenty of land; from agricultural to housing and service ones, the matter that shared in the decrease of agricultural lands in Amara City, the thing that the occupied lands, preoccupied with housing and services amounted to 251 hectares during the five stages in which the city passed.

**Key Words:** Urban Expansion, Agricultural Lands, Amara City, Land Uses, urbanization.

### 1. Introduction:

Aggravation of urban sprawl problems on the agricultural lands swiftly and without appearance of any initiative for solution led to increase most complicated things, this problem glorified and became a worldly phenomenon (Al-Tarawneh, 2014) storming all the world developed and developing states, and formed a challenge for most of the world countries, especially the developing ones after the inhabitants of the world greatly increased during the past century, simultaneously witnessed unprecedented concentration in the urban zones sprawling to the agricultural zones (Almusawi, 2018). The urban growth of Amara City against the agricultural lands coupled with the housing increase resulting from the increase of births or because of migration to the city

for the availability of the housing lands, therefore the area occupied by the city increased, but the housing growth was with a negative effect represented in the increase of the architectural sprawl against the agricultural lands and the service zones, the thing that in turn, led to exhausting the agricultural lands, considered the main source of inhabitants food (Kaifang Shi and Others, 2016), the constant urban sprawl against the agricultural lands in Amara City without a legal deterrent forms a danger leads to losing the agricultural productivity and its deterioration.

Amara City witnessed an acceleration in the urban sprawl that negatively affected the agricultural territories, available in their housing quarters, and the housing land usages started sprawling conspicuously in return for agricultural lands decline.

Existence of Degla river and its branches had an encouraging role in Amara City; for it pushed plenty of its inhabitants to practice the farming crafts since ancient times, the thing that shared in the spread of agricultural lands and orchards stretched all along banks of the River, but these green territories changed their area during the stages of urban growth of the city, their type transformed into territories with residential use, and simultaneously agricultural residential quarters appeared within the limits of the city. The agricultural territories in Amara City amounted to 2615 hectares in 2018 and formed by that the agricultural lands a rate of the agricultural lands amounted to 35.45, meanwhile the un-agricultural lands formed a rate of %64.6, and so all these lands will transform into residential zones.

The problem of study is limited in the increase of the construction phenomenon in the agricultural zones because of the natural increase in population and fewness of the area specialized for construction inside the Amara City, and in turn this phenomenon led to decline large area of agricultural lands and transforming some of them within the architectural domain into residential use.

The significance of the subject comes in analyzing the effect of the urban sprawl on the agricultural lands, and so the results of this study will assist the decision-makers in taking legal and technical procedures in limiting the negative effects of the urban sprawl on the agricultural lands (Reem S, Alwahaibi and Waleed S. Alzami, 2021).

The study aims at limiting the fertile agricultural lands surrounding Amara City, that should be protected and kept from the urban sprawl, suggesting some policies to protect the agricultural lands and stop the architectural sprawl against them.

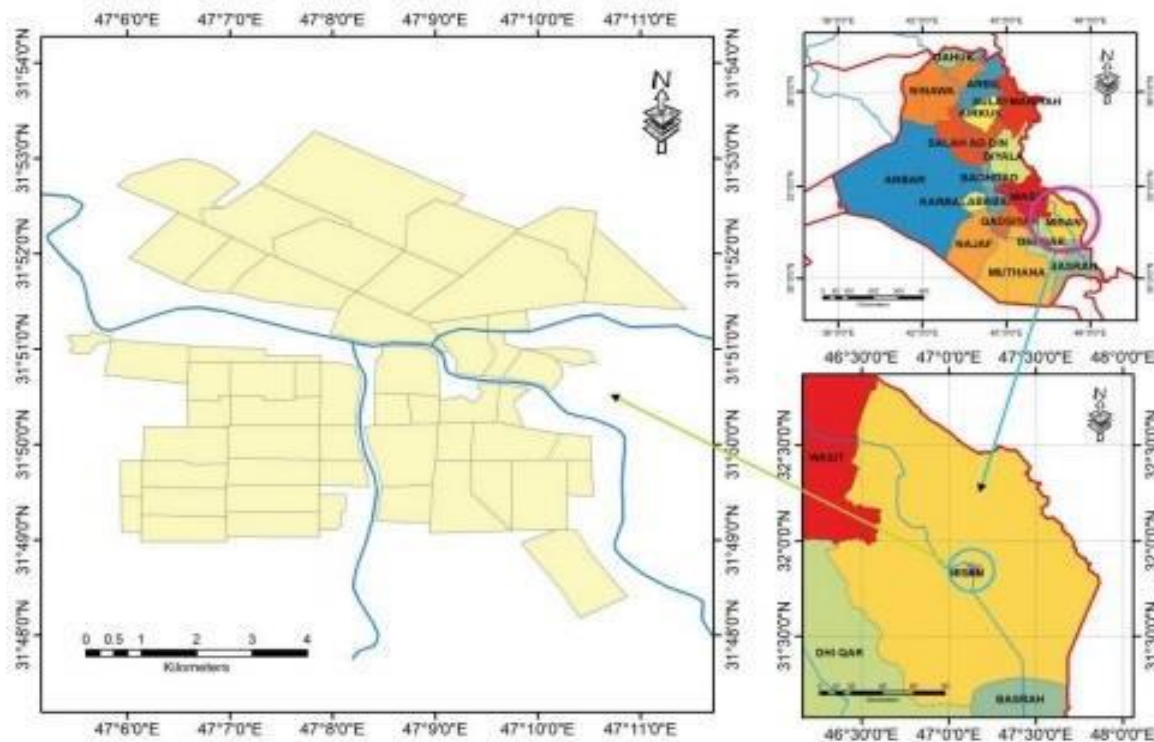
Some previous studies had indicated to loss of agricultural lands resulting from the urban expansion (Alsaedi, 2020) plenty of lands were lost as a result of this sprawl. And there is another study done in 2018 entitled "Impact of architectural expansion → on the agricultural lands and producing productions in Enkiba District of Nigeria concentrated on the rate of agricultural lands loss and extent of this loss on productivity of agricultural products in the place of study, and depended by that on analyzing pictures of artificial moons (Ejaro & Tokuala, 2018).

## **2. Subjects and Techniques:**

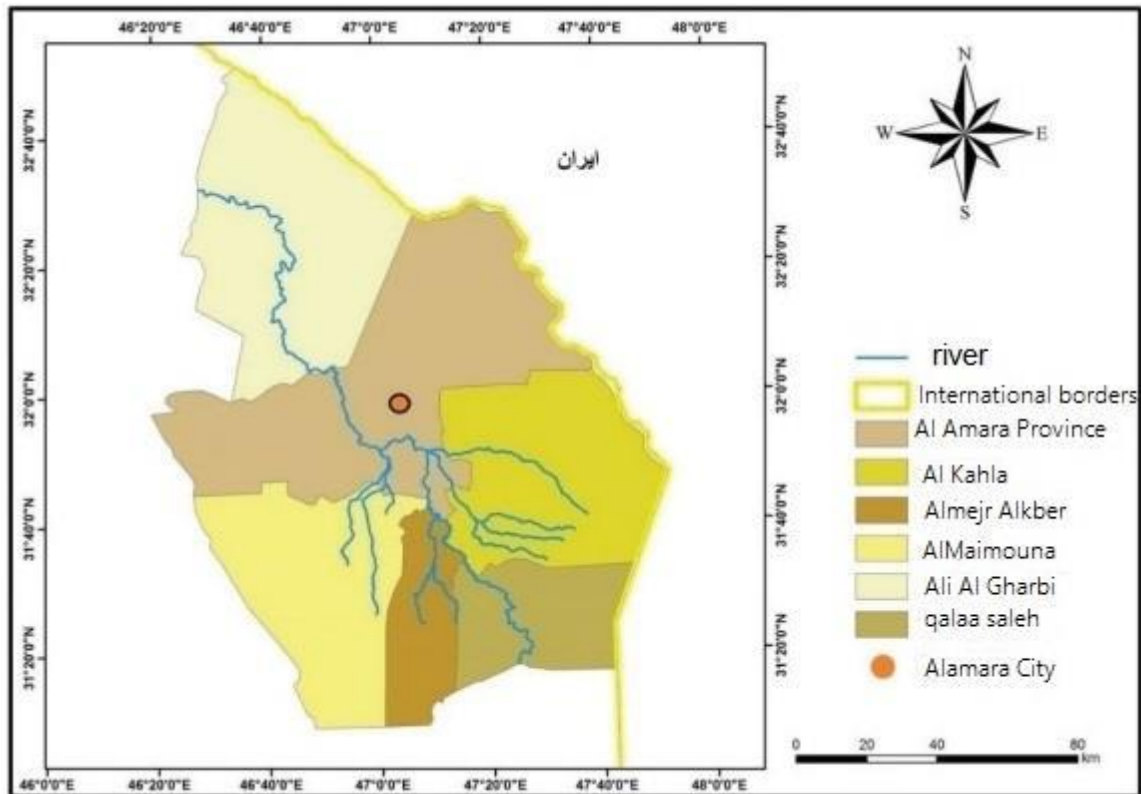
### **Case Study of Amara City:**

Amara City represents the center of Misan Governorate, where the governorate locates in the south-eastern part of Iraq, and takes north-eastern, south-western expansion, confined between both circles of latitude 31.15–32.45 in the north and between both longitude lines 46.30-47.3. in the east, corresponds from the north and the north-eastern Wasit Governorate and from the south Basra Governorate, from the west Thi-Qar Governorate, meanwhile corresponds from the east and the north-eastern Iran (Figure 1) the area of the governorate amounts to 16072 square kilometers, comprises six districts and nine counties, by that it represents the rate of 3.7% from Iraq area amounting 435025 square kilo-meters (Almusawi, 2020).

The area of Amara City within the limits of the municipality amounted to 48.5 square kilometers that is %0.3 from the area of the Governorate region and its location is central within the limits of the region (Al-Musawi, 2018), for it mediates the urban congregations; corresponds from the north Kumeit Disstrict 40 kilo-meters far from it and from the east both counties of Al-Mashrah 30 kilometers and Kahla' 24 kilometers, from South Great Major, Saleh Castle at 32 kilometers far, and 37 kilometers consequently and from the West Al-Maimonah City at 22 kilometers far (Figure 2).



(Figures 1) Misan Governorate Location, Iraq.



(Figure 2). Location of Amara City from the region of the Governorate.

#### Topography of the Area of Study:

Most of superficial geological formations of the areas of study refer to the fourth geologic times represented in the residue filled up by Degla River and its streams, in addition to what brought by the river valleys, coming from the east at floods season, and there is a narrow strip stretches all along Degla River to the north-eastern side of the area of study, represents geologic formations date back to the ends of the Third Geologic Millennium. The proof of the Amara City is characterized by relative flatness being a part of the sedimentary plain, this flatness was formed a cause of the nature of the geologic environment of the area, therefore the roof of the city has a positive effect in the area expansion, then easiness in stretching transport ways and expansion of urban growth and for all uses of land inside the city, the thing that was reflected on the architectural sprawl on terminals of the city including the agricultural zones (Fanjan, 2015).

Existence of differences in the level of the city land roof in the eastern part of the city amounts to (10) meters height over the sea level and decreases to (7) meters in the South of the city, and the gradual decline in the area located east of Degla River is distinguished; for its height amounts to (9) meters, but the northern part of Degla river, the highest height had been represented in (8) meters, also the Western part of the city amounted to (8) meters over the sea level.

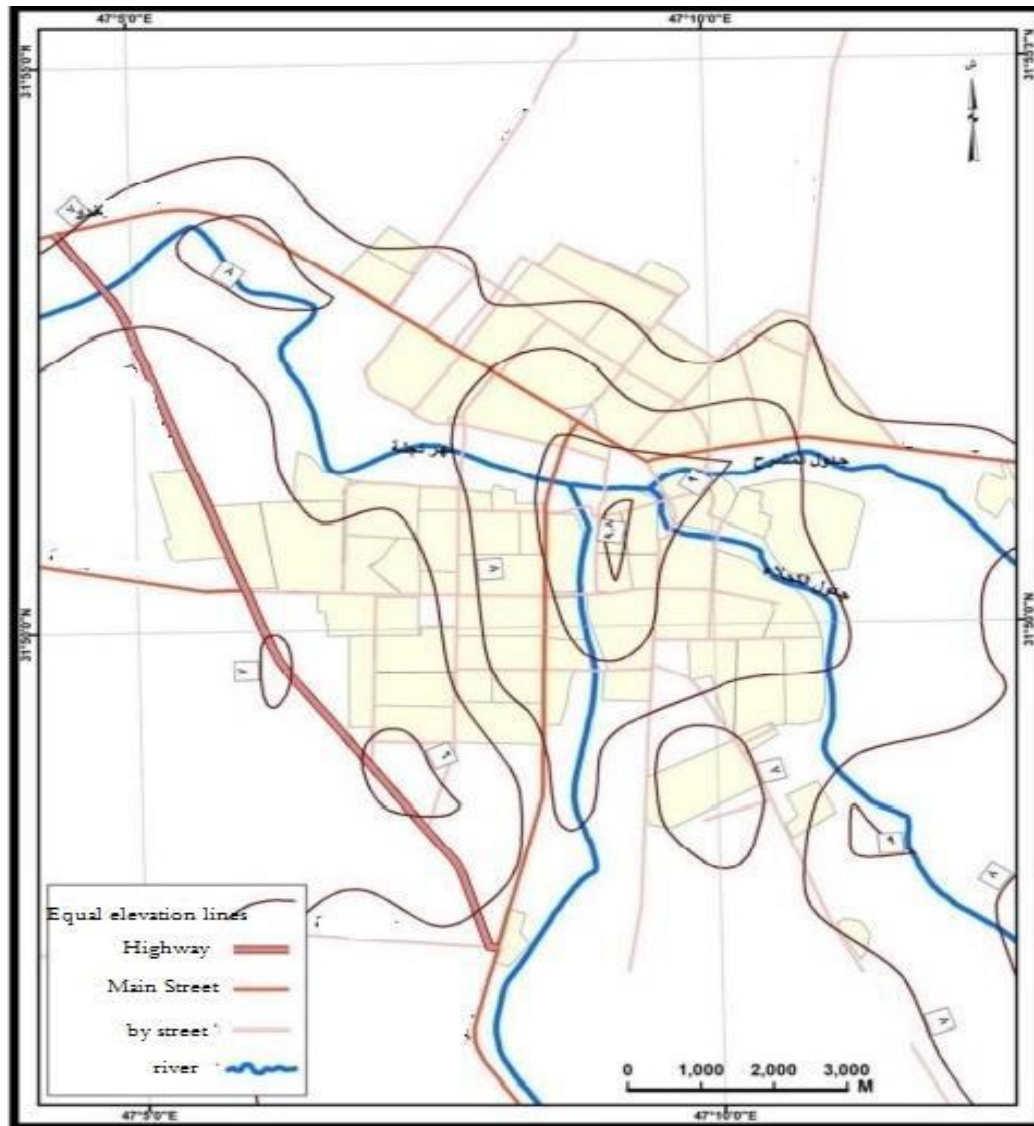


Figure (3): Topography of Amara City

In this paper, some maps related with the subject of study had been employed through technology of Arc Map 10.3 in specifying the study area and distributing the administrative units, and also explaining the spatial override on the agricultural lands surrounding the city by employing the basic map of designing the city of Amara and the override had been noticed on the agricultural lands and transforming them into residential zones.

#### **A General Look at the Urban Sprawl:**

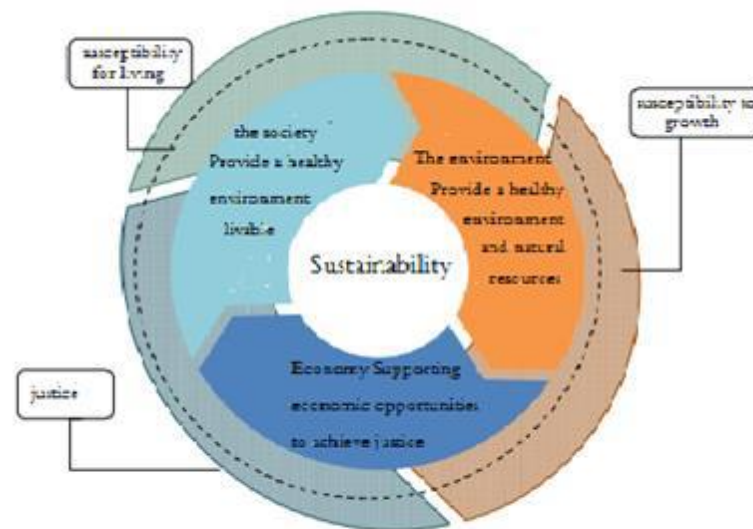
The architectural expansion leads different forms, including the residential buildings, the industrial utilities, and infrastructures and its types multiply on the agricultural lands, towards the swift high-ways, and on the archeological locations, on water sources and biological variation sources (Rafferty, 2020). Architectural Sprawl on the agricultural lands is still representing a problem faces the world of agricultural resources. It is not a pure development deteriorates the type of life for inhabitants of suburbs, but it is a stimulation all over the



world, callers of just housing, ecologists, and planners of employing lands, even numerous business-men in suburbs, who cannot find a needed business, they knew that costs excessively overstepped aesthetic (Squires, 2002).

Architectural sprawl is a problem affecting the urban communities, their suburbs and country territories, resulting from the loss of agricultural lands, because of the resolution of ancient urban centers. In its way, the expansion wastes thousands of acres of forests and agricultural lands. Policies of land-employing that allow this expansion depend on a complicated work of rules and laws (Pendall, 1999).

The urban sprawl leads to loss of a million hectares of agricultural lands every year at the level of the world, as a result of cities administrations wish in enlarging roads and industries, in addition to housing projects and else, (Figure 4), and keeping balance among the environmental, social and economic objectives became a necessary demand to achieve survival of cities, therefore residential growth and un-survival management techniques create pressures on the environmental system and expose the ecological balance to danger (FAO, 2012). Increase of human activity leads to increase in regeneration of carbon dioxide gas, methane, and nitroz oxide, that is because of employing the fossil gas and change of lands employment (UNEP, 2007). And so the increasing pressure on the natural resources to fulfill the needs of housing growth leads to decrease of environmental level, ecological system and nourishment security of the city (Almusawi & Obaid 2018).



(Figure 4) The importance of balancing environmental, economic and social goals.

### 3. Results & Discussion:

The overstepping phenomenon against the green zones emerged since the second stage of growth and enlargement of Amara City, so at the beginning of fabulous forties from the past century, the government started to establish some residential quarters, such as Al-Majediyah and Dbeisat quarters. Most of their lands were agricultural, like palm trees orchards surrounding the city, forming afterwards, residential assemblies, the thing that forced the local authorities to open new streets surrounding these assemblies, and then worked to

improve their appearance and provide them with some services of infrastructure, then transforming them into residential quarters (Almusawi, 2016).

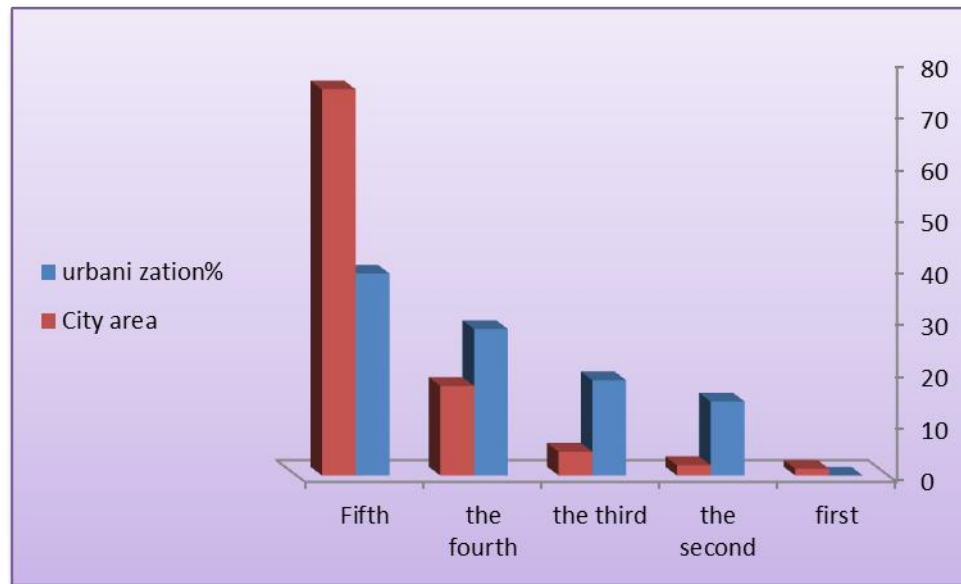
The area of the city amounted to 231 hectares during the second morphological stage. The process of growth and urban expansion against the agricultural lands, so great areas of orchards overlooking Degla River within limits of Al-Majedeyah quarter were transformed into residential lands, for 30 hectares had been added as a result of shoveling orchards in this stage, also the case is applied on orchards at Dbeisat quarter overlooking Degla River, for 2 hectares had been cut beside 4 hectares had been transformed into a cemetery to bury Englishmen in the city, who were killed during Iraq occupation in the fabulous twenties of the past century (Figure 5). And a part of the green lands to establish Al-Kahla' Bridge in 1932. In the table No. 1 and figure 6 we show the urban expansion against the agricultural lands at Amara City in 2021.



(Figure 5) British Army Cemetery in Amara.

Stage	City Area/ Hectare	Expansion Against Agricultural Lands/ Hectare	% Rate
First	1.3	-	-
Second	2	36	14.3
Third	4.6	46	18.4
Fourth	17.3	71	28.3
Fifth	74.6	98	39
Total	11124	251	100

Table 1 Expansion of the city's area on agricultural land.



(Figure 6) Expansion of the city area on agricultural land

Growth and expansion against the agricultural lands continued in the stage of sixties of the past century in the center of the city. During this stage there was a trend of the government to exploit the agricultural lands by transforming them into other employments. As done in partition of a great part of the orchards adjacent to the military site at an area amounted to (9) hectares, and establishing a public hospital at an area of (7) hectares and an area for celebrations near the building of the governorate and neighboring hospitality, also the building block was established by partition a part of the orchards and constructing a project story of the building block at an areas of (9) hectares, beside establishing a game city against orchards and green lands at an area of (8) hectares, and establishing the Cairo Quarter after partition a great part from the orchards existing near, for they amounted (12) hectares. Also (13) hectares of orchards had been added and transformed into A'washah quarter during this stage as well. A number of public and service institutions were established like Directorate of Water Resources, Directorate of Nationality, Freedom Playground, Scientific Care Forum and the Iraqi Bank for the partitioned area to amount to (13) hectares.

But the fifth morphological stage is considered the most changeable stage, for the danger of this problem doubled after the year 2003 for owners of orchards and agricultural lands exploited the absence of law, they transformed great areas of plum trees orchards all along rivers of Degla, Kahla' and Mashrah into residential, commercial, entertaining and industrial lands. The most distinguished of this stage is the spread of random housing, the thing that assisted for reducing agricultural areas surrounding the city, the thing that resulted in negative effects for the environment.

Increase of population in the city and swift growth from 272286 persons in 1997 to 577443 persons in 2020 has to increase the rate of overstepping against agricultural and green lands, and so the city will transform into a desert if the architectural expansion stay at this case

without seeking refuge to good planning components, in addition to another factor having effect in increasing urban expansion represented in high price of land inside the city. Amara City had witnessed a great rise in residential lands prices, especially after the year 2003 as a result of economic level height and return of many migrant families from abroad, the thing that led to rise of residential lands prices and rents of residential units, that pushed family owners to seek a means to get rid of the materialistic burden. This encouraged the capitalists to buy agricultural lands and orchards inside the city, divide them and distribute them as housing lands (Almusawi, 2018).

#### Trends of Urban Sprawl against the Agricultural Lands:

Amara City location on Degla River and its branches has a big role in increasing the area of agricultural lands on both banks of the river or the far zones from it, in addition to zones specialized as green ones within the basic design of Amara City. To illustrate trends of urban expansion in the city and the number of the housing units built in it, it is noticed from the table (2): that the western sector of the city absorbed the highest rate %46.4 of the number of the housing units in the city, and this sector occupies the areas locating all along Degla River from the west direction at the entrance of the river north of the city. Housing units in this sector amounted to 2674. It is clear from table (2), that the total of housing units of the agricultural type amounted to 5764 units distributed on sectors of the city. It is also noticed that the eastern sector secured the second rank at the rate of %33.7. it is the one that occupies the areas all along Degla River from the east direction, and occupied numerous zones within parts of the city represented in orchards of quarters located within this sector amounting five housing quarters. But the northern sector covers the area locating in the north of Degla River. This sector was distinguished by the existence of a number of land employments, represented in the housing employment. The number of housing units within this sector amounted to 1145 units at a rate of %19.9 from the total of housing units in the area of study (Figure 7).

Sectors	Number of Housing Units	%
Northern	1145	19.9
Eastern	1945	33.7
Western	2674	46.4
Total	5764	100

Table 2 The number of housing units in agricultural lands

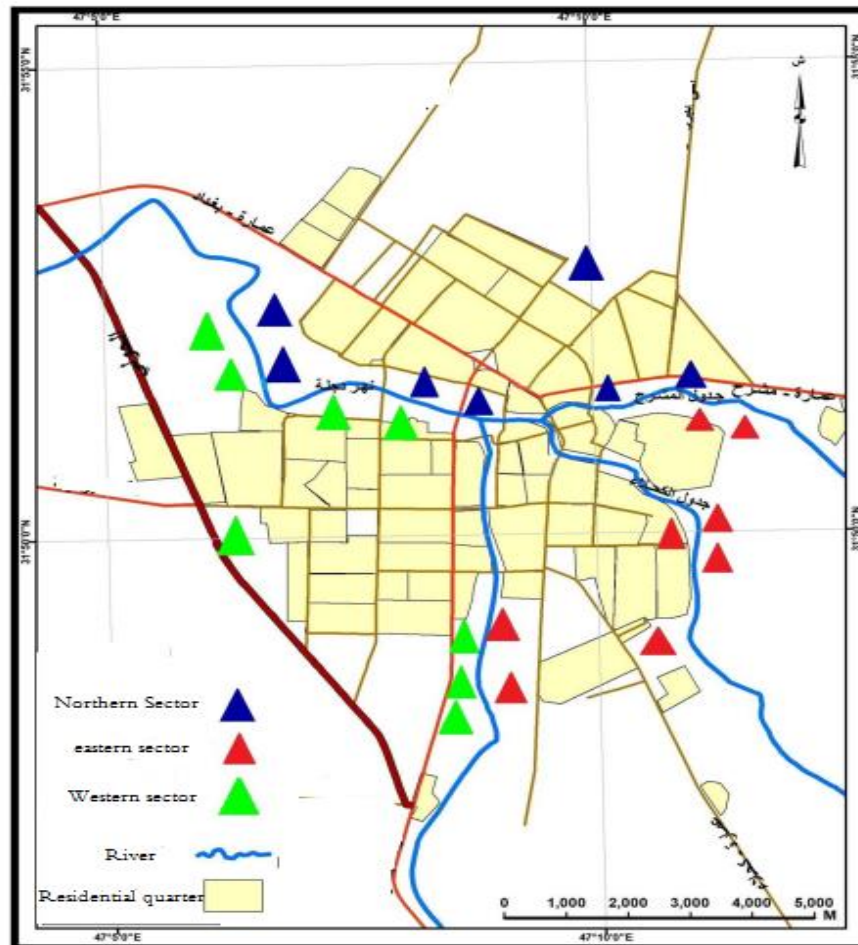


Fig7 encroachment on agricultural areas

### Problems of Architectural Sprawl against the Green Squares:

the architectural Sprawl negatively effects the agricultural lands. Their area greatly decreases and construction spreads on large areas of the city except remains a small area for agriculture. If this architectural Sprawl continues against agricultural lands at this form after numerous years we will find that the agricultural lands transformed into architectural zones, and this sprawl will lead to desertification of the agricultural lands and their loss, considering the architectural Sprawl against the agricultural lands threatens the future of humanity, because of its direct effect on food sources, then on health and life style of inhabitants, because the loss of agricultural lands means the decrease of producing food, and this is what Amara City witnesses, because of aggression against the green squares, Figure (8):

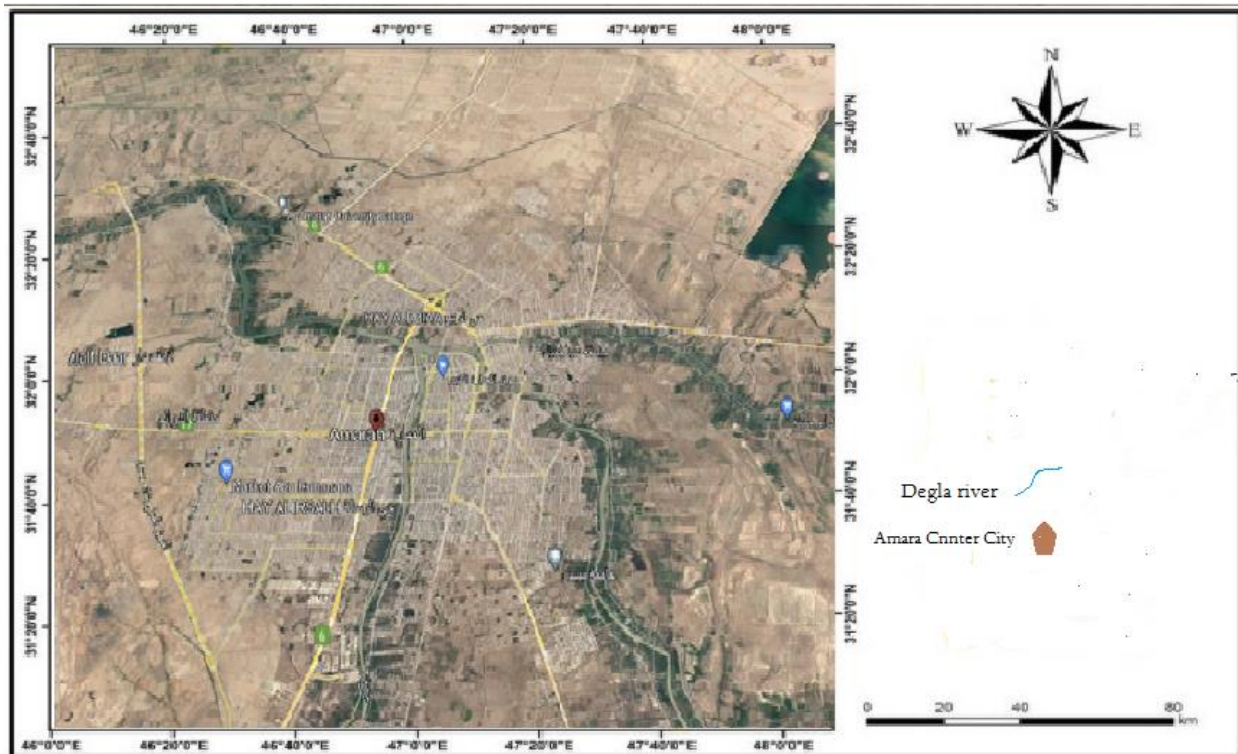


Fig 8 The Urbanization of Agricultural Areas in Amara City

Urban growth against agricultural lands led to change in the economic structure of agricultural lands inhabitants, where the rate of workers in agricultural retreated, meanwhile rate of workers in other service activities were raised, and so formed a dangerous phenomenon on the architectural assemblies, represented in the economic damages that can be caused as a result of the random assemblies depending on the nature and size of the problem and its relationship with the economic activities in the city (Taha, 2020).

Total of the lost agricultural lands area amounted to 98 hectares. The greatest part of them transformed into housing quarters distributed on the city, to form new housing quarters in the sectors of the city. These lands were distinguished as the best of agricultural lands from part of their productive ability; for they were with agricultural production fulfills the need of inhabitants of the city of Amara before the year 2003 being located on shoulders of Degla River and its branches and these lands were characterized with abundant production of wheat, barley, rice and corn, in addition to producing milk resulting from cows and goats.

From the other side, environmental effects worsely increased, because of the architectural sprawl against the green land leaving effect on environmental balance system. So the more increased squares of sweeping spaces and change of green lands employments into other employments, the most appeared the effects of climate and increase of air-pollution average, in addition to appearance of negative effects on aesthetics, entertainment, health and social phenomena (Kmunna, 2009), the environmental impact of agricultural Sprawl in the agricultural zones is considered the most abundant through removing the plant cover in the agricultural zones sold to citizens, especially these zones are famous in planting palm trees and other agricultural products (Almusawi, 2018).

#### 4-Conclusion:

Most of studies about place pattern for loss of agricultural lands connected with urbanization in Amara City were done at the local level, and few who looked in this subject at present. This paper had discussed the negative effects of the architectural sprawl against the agricultural lands in Amara City quarter, that suffered from unplanned random expansion, that did not concern about the future side of urban growth in the city overstepping's on agricultural lands transformed into urban employments appeared and the city lost (98) hectares of lands good for agriculture in the period of study between 2003-2021, through which the western sector appeared with more overstepping on agricultural lands achieving a rate of (%46.4).

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### الزحف العمراني على المناطق الزراعية في مدينة العمارة

محمد عرب الموسوي كلية التربية الاساسية ، جامعة ميسان  
حنان صبحي عبيد جامعة مينيسوتا / الولايات المتحدة الامريكية

المستخلص:

يعد الزحف الحضري على حساب الاراضي الزراعية من اهم المشكلات التي نتجت عن النمو السكاني السريع في الدول النامية، حيث تتعرض الاراضي الزراعية الى ضغوط وتآكل نتيجة لهذا الزحف وعملية التحضر وضعف القوانين الرادعة، وقد شهدت مدينة العمارة نموا ملحوظا في معدلات النمو السكاني نتيجة لمتطلبات التنمية حيث ارتفع عدد السكان في المدينة من 272286 نسمة عام 1997 الى 577543 نسمة عام 2020 ونتيجة لذلك ادى الى استيطان اعداد من السكان في المناطق ذات الصبغة الزراعية وتغيير جنس الكثير من الاراضي من زراعية الى سكنية وخدمية مما ساهم في انحسار الاراضي الصالحة للزراعة في مدينة العمارة لتصل الاراضي التي تم الاستيلاء عليها واشغالها بالسكن والخدمات الى 251 هكتارا خلال الخمسة مراحل التي مرت بها المدينة.

**الكلمات المفتاحية:** التوسع الحضري، الاراضي الزراعية، مدينة العمارة، استعمالات الارض، التحضر.