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The Reality of the Production of the Main Cereal Crops in Iraq and Their Impact on Food Security for The Period (1995-2016)

ABSTRACT

The research aims to study the reality of production and food security in Iraq for the most important strategic goods especially (wheat and rice), which are the subject of the study because the case of the food security became one of the most important interesting cases today under the food crisis, which most of the world states are suffering from and that showed reduction in the most main important food goods and most wanted, therefore the research depends on the hypothesis that the fluctuation in production of these crops correspondence to an increase in consumed quantities due to many economic factors. according to this hypothesis, the research depends in its methodology on the method of linking between the two directions, the quantity and description style which depends on standard economic methods and its styles, where it uses the minimum squares methods of two –stage (2.S.L.S) where in the first stage of analysis, the production quantities (wheat and rice) are used as a dependable variable and each of (local demand volume, mechanical technologies, cultivated area, hectare share of agriculture work, and volume of agriculture loans) are used independent variables and the volume of food gap is used as a dependable variable. the research reaches that there is a consuming gap of these crops and their consuming is increased because of increasing of population, which caused high in size of food gap where it is treated by importing which increases the general budgetary burdens of the state. The food problem is expected to increase in the future under the international economical trends, which aim to liberate the international trade and globalization of food. Based on the findings that the research is obtained, the study recommended for reaching to good levels of self- sufficiency through increasing the production by integration of state's efforts with the farmers to put the integrated strategies to reach food security by supporting of the agricultural sector through the optimal and rational use of the natural resources and the use of modern methods in agriculture to face the food problem.

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INTRODUCTION

The cultivation of grain crops, especially (wheat and rice) occupies an important strategy in Iraq because of its exchange capacity in the international market. This has prompted many developing and advanced countries to adopt economic policies aimed at developing the crop and undermining its import to achieve self- sufficiency, and this means that the state seeks to raise its competitive ability of these crops, enhances its exports, and develops the foreign exchange. These crops are considered one of the most important of the main food goods, on which many categories depend especially those

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states with limited or weak average incomes. The history of economic thought is rich in the events of states that collapsed because of the deals of grains. Iraq is considered as one of the developing countries which has factors of agricultural activity of fertile soil and abundant water and a suitable climate. For many years, Iraq has adopted a method of developing wheat cultivation through direct government support at one time and providing credit and tax facilities at other times however, the extent to which wheat development plan in Iraq is successful needs to be studied and evaluated in order to address deviations and put an accurate perceptions of the future plan and from this view came the problem of the research. The research is based on the hypothesis that the fluctuation in cereal crop production is offset by an increase in the consumed quantities during the study period from (1995-2016), which increases the size of the food gap, that is reflected in food security of these crops and this is due to several economic factors vary in their effect on both the volume of production and the food gap of wheat and rice crops. The objective of the study is to study the reality of production and the food security of cereal crops in order to reduce the quantities produced and the quantities consumed to reach self- sufficiency and then food security of these main crops which reduces the burdens of the state budget.

The food security and its indicators

Human being has known the hunger from his beginnings and learnt how to overcome it, to make the goals of food and health security, to increase its resources, and the importance of exchange and cooperation among regions and peoples and from this series of concepts have been raised whenever the awareness of the importance of food is increased and the problem is removed, from here came the term of food security as a term proposed by international organizations and bodies and adopted by governments to be accompanied by other terms like national security, strategic security, social security or other terms, which alerted to the need to face the problems or risks that threatening society to take the required and necessary measures to reduce their effects, therefore, any country seeking its political independence must support that independence with economic independence especially in developing countries which are suffering from lag (Bahosh 1998, 201). Food security is a major challenge facing Arab countries. Despite the availability of land resources like lands and human resources, Arab agriculture has not achieved an increase in production to meet the demand for foods and the gap is extended and these countries became importing around half of their need from the main food goods. The researchers differed in providing a precise definition of the concept of food security and this is due to the vitality of the subject and dealt with in more than one way. Food Agriculture International Organization (FAO) defined it as food must be provided to all community individuals with the required quantity and quality to meet their needs continually for a healthy and active life (Arabic Organization for Agriculture development 2009,16) and the international bank also defined it as the individuals could get enough food for their active and healthy (Anony mons, 1999: 24) and through these two previous definitions, the food security includes three main standards:

A- The extent of the food availability (the whole availability)

B-The sufficiency, getting the food

C-The sufficiency, which includes the healthy and sufficiency of the food

Two kinds of food security can be differentiated one of them is absolute and the other is relative, therefore the absolute food security means, product the food within one state, which is equal or exceed the domestic demand. It is clear that this concept faces many thoughts and it is not real and it also misses the country concerned to benefit from the international trade based on specialization, division of labor and exploitation of relative advantages, while the relative food security means the ability of a country or group of countries to provide food commodities fully or partially (Thalag And others 2012 :172). Finally the definition can be determined on individual level when he considers himself in food security when he can get sufficiency food for daily living throughout the year. The level of food security depends on his ability to get that quantity and the latter is mainly linked to incomes and prices (Bahosh, 1998, 2-5). There are many indicators that can be relied on to know the levels of food security in any country and there are several indicators of food security, the most important of which are the food gap, which is reflected by through the inability of local food

production growth rates with the growth rates of total consumption of food, in other words, it is an expression of the adequacy of local food production to meet local consumption requirements which can be calculated by the following law. The size of food gap –the production –the consumption As well as the ratio of self –sufficiency, and the need of each country to rely on its own resources to meet the economical needs, which requires the reduction of imports and local expansion of the production of all goods, the food self- sufficiency ratio of a particular commodity is calculated as follows : The ratio of food self- sufficiency of a particular

$$\text{commodity} = \frac{\text{The quantity of domestic production}}{\text{Consumption quantity}} \times 100$$

The strategic storage is considered one of food security indicators that means food needs, which are retained and managed within each country in order to ensure the stability of consumption to meet the extreme fluctuations in world prices or the fluctuation of local production. This concept extends to include risks due to political reason such as wars and the resort of monopoly state to the use of strategic food commodities as a means of political pressure (Arab Organization of Agriculture Development 1999 :104).

THE REALITY OF PRODUCTION, CONSUMPTION, FOOD GAP, AND SELF-SUFFICIENCY OF MAIN CEREAL CROPS IN IRAQ 1995-2016.

Cereals, especially wheat and rice, are the most important components of the food security basket, as they are used in many food uses, primarily bread loaf in different forms. Cereals play an important role in the food security system of all societies and peoples even varying degrees and according to the nature of food security prevailing in them because they are regarded one of the main food goods, which have a great importance in the stability and progress of countries, where these crops constitute one third of dry material and about half the amount of protein consumed by human beings in food. (Kilidar et.al.2010:73), therefore, Iraq has become one of the countries that suffers from the large breadth of food gap in the most important foodstuffs and cereals and in order to fill this gap was relied on imports from international markets and this of course cost the country 's budget more financial and economic effects. On this basis, it requires an analytical look to examine the development of production and consumption of local food crops strategically for the years (2003-2014) especially the crops of wheat and rice because they have importance in daily consumption of the Iraqi individual as shown in table (1).

The table (1) shows that there is a disparity in the amount of food gap for cereal crops in Iraq due to the fluctuation of local production, as the amount of food gap for the wheat crop in 2003 (159) thousand tons, while the product was (2329) thousand tons, but the rice crop, the food gap was (9013) thousand tons and the domestic production was (732) thousand tons and these quantities were increased in 2014 where the amount of food gap of wheat crop was (1889) thousand tons while the production was (2461) thousand tons and the food gap of rice crop (1302) and the produced quantities (300) thousand tons.

And table (2) shows that the forecast quantities of wheat are estimated (3606) thousand tons in 2030 while the forecast quantities of rice are estimated (497) thousand tons.

Table (1): The quantities produced and available for consumption and the gap and the self-sufficiency of the wheat crop In Iraq for the period 1995-2016

| Years | Production of wheat One thousand tons (1) | Wheat Yearly demand (available For consumption) (thousand tons) (2) | Food gap One thousand tons (3) | Rice production (thousand tons) (4) | Rice yearly demand (available For Consumption) (thousand tons) (5) | Food Gap (thousand tons) (6) |
|-------|---|---|--------------------------------|-------------------------------------|--|------------------------------|
| 1995 | 1091 | 1091 | - | 313 | 7598 | (7285) |
| 1996 | 1150 | 3041 | (1891) | 283 | 7815 | (7532) |
| 1997 | 947 | 3174 | (2227) | 274 | 8157 | (7883) |
| 1998 | 1475 | 3269 | (1794) | 390 | 8399 | (8009) |
| 1999 | 1102 | 3367 | (2265) | 219 | 8651 | (8432) |
| 2000 | 1040 | 3468 | (2428) | 294 | 8911 | (8617) |
| 2001 | 2219 | 3573 | (1354) | 301 | 9180 | (8879) |
| 2002 | 2589 | 3681 | (1092) | 194 | 9458 | (9264) |
| 2003 | 2329 | 2170 | (159) | 732 | 9745 | (9013) |
| 2004 | 1832 | 2442 | (610) | 250 | 10041 | (9791) |
| 2005 | 2221 | 2523 | (302) | 309 | 10346 | (1003) |
| 2006 | 2286 | 6623 | (4337) | 363 | 10659 | (1029) |
| 2007 | 2202 | 7007 | (4805) | 392 | 10982 | (1059) |
| 2008 | 1254 | 3180 | (1926) | 248 | 11313 | (1106) |
| 2009 | 1700 | 4649 | (2949) | 173 | 11777 | (1160) |
| 2010 | 2748 | 3991 | (1243) | 156 | 12099 | (1194) |
| 2011 | 2808 | 4707 | (1899) | 235 | 12332 | (1209) |
| 2012 | 2400 | 4132 | (1732) | 361 | 12656 | (1229) |
| 2013 | 2652 | 4277 | (1624) | 451 | 12985 | (1253) |
| 2014 | 2461 | 4351 | (1890) | 300 | 13321 | (1302) |
| 2015 | 2576 | 4957 | (2381) | 1092 | 13661 |)12569(|
| 2016 | 2628 | 5078 | (2450) | 225 | 13991 | (13736) |

Reference : Columns (1, 4) are from the work of researchers depending on:

-Data of Central Bureau of Statistics and Information Technology, Ministry of Planning – Iraqi Republic – Annual Statistical Yearbook for the years (2003- 2016)

- (Columns 2,5) were calculated according to the following formula: Available Quantities for consumption = The domestic production + Net Foreign Trade (exports –imports)

-(Columns 3,6) the food gap was calculated according to the following formula The food gap = (The production _ Available Quantities for consumption)

Table (2) the expected quantities of wheat and rice in Iraq for the period 2020-2030) (thousand tons)

| year | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|------|------|------|------|------|------|------|------|------|------|------|
| Forecasting the quantity of wheat production | 2853 | 2928 | 3003 | 3079 | 3154 | 3229 | 3305 | 3380 | 3455 | 3531 | 3606 |
| Forecasting the quantity of Rice production | 425 | 432 | 440 | 447 | 454 | 461 | 468 | 475 | 483 | 490 | 497 |

Source: Prepared by researchers.

REFERENCE OFFER (PREVIOUS STUDIES)

Strategic grain crops occupy a prominent place in the Iraqi economy if these crops (wheat, barley, rice) are of high nutritional value as the backbone of food security (Abdulla, Al-Zubaidi, 2016: 233) This is why the crops are important in the agricultural development process. The developing countries have taken care of the development of the agricultural sector not long ago because this sector suffers from difficulties and obstacles to stimulate producers and investors in this sector (Ali, Ahmad 2016: 196) Hence the reasons why agricultural development is vital to any society (Thamer, Al-Ajili, 2016: 220) The agriculture sector is one of the main pillars in the construction of the economic entity in many countries, including Iraq, which has several constituents represented by suitable lands for agriculture, waters and capital, but poor planning and rampant administrative corruption have made the level of production low to meet domestic demand for agricultural products and achieve self – sufficiency. The most important studies have d=been obtained are as follows: Ibrahim, et al, presented a study titled Effect of agricultural policies on wheat production in Saudi Arabia by using the method of policy analysis as one of the modern tools in measuring the impact agricultural policies represented by government support for wheat production. It has been shown, that the focus on wheat cultivation in the large capacity farms, is highly efficient and the study recommended that it is necessary to support special researches that increasing the production and decreasing the costs of production and concentrating on wheat cultivation in the large capacity farms due to its ability to achieve a high production efficient, while in the study of Al nuami and Saoor (2008) about the effect of support policies to product wheat crop and its consumption in Iraq for the period 1985-2005, where the study showed that each of production and consumption taking an upward trend average(2,7 - 0,65) thousand tons respectively during the mentioned period. The study also proved that the policies pursued by the state have a positive effect on the consumer and negative effect on the producer welfare during the study period. Kelidar, et al, (2010) conducted a study that included the economic analysis of future expectations for wheat production and consumption in Iraq for the period (2010-2020), and the use of appropriate prediction models, linear regression methods and the method of Box Jenkins. The research reached to the most important conclusions after the expectation of the demand for wheat and the size of the total consumption was achieved, which achieves self- sufficiency of wheat in Iraq, which appeared to range from (5014) million tons in 2010 and (6054) million tons in 2020. The research recommended the need to pay attention to wheat crop well and allocate appropriate areas, especially in irrigated areas to achieve the self –sufficiency and the need for attention to irrigational agriculture compared to rain irrigational agriculture to prevent fluctuations in productivity annually. It is necessary to change traditional spraying methods and replace them with modern spraying methods to benefit from water well and prevent waste of waters.

Thalag, et al (2012) conducted a study about the effect of agricultural policies on the food security in Arabic countries, including Iraq by using the normal minimum squares method to know the effect of some independent economical and agricultural indicators on the dependable variable, the quantity of agricultural output of the wheat crop and then measure the estimated output amount of the first model with some indicators of agricultural economical policy in size of food gap of wheat crop by using the minimum squares method with two stages to reach the more accurate results. One of the most important conclusions that has been reached is the deficit of output quantity of wheat crop to keep pace with the quantities consumed because of the increase and rapid growth in all countries of research sample. This leads to increase of the total demand of this crop and the inability to reach the stage of self-sufficiency

RESEARCH MATERIALS AND ITS METHODS

The stage of characterization of the model is one of the most important stages used in the estimation and the most difficult one in econometric and is often the most difficult point of econometric applications to formulate the model correctly, therefore the method of minimum squares with two stages is used in our research because this method is one of the easiest and widest way to estimate the structural parameters of fully diagnosed equations and above the diagnosis in the model of the current rates and gives estimations consistent under conditions that weaken the method of normal minimum squares and outperforms other methods because it also gives the normative errors to the estimated structural parameters directly. The essence of this method is to replace the independent variables that are used as approximations to the original variable which is not mainly related to the random variable and then the method (OLS) can be used to estimate the equation:

Our research model consists of the following main model:

$$Y = F(X_1, X_2, X_3, X_4, X_5)$$

$$Y_1 = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + U_i \dots (1) \text{ production quantities of wheat crop (thousand tons)}$$

X1=the size of local demand (available quantities for consumption) (thousand tons)

X2=mechanical technology (1000 horse)

X3= cultivated area (hectare)

X4= hectare share from agricultural work (worker / hectare)

X5= the size of agricultural loans (million IQs)

B0= absolute limit. B1...B5= variable coefficients. Random variable

But the second stage of estimation, it is formulated as follows :

$$Y = F(X_1, X_2)$$

$$Y_2 = B_0 + B_1X_1 + B_2X_2 + U_i \dots (2)$$

Y2=the food gap (thousand tons)

X1= the estimated production quantity from the first equation

X2= average per capita rate

This model is consisted of two equations, which means that the estimation will be on two stages from the stages of estimation by the method of minimum squares with two stages. By using the program (SPSS), the parameters were assessed to determine the effect of each of the independent variables in both the production of food gap from the wheat and rice crop in Iraq depending firstly on the economic standards, which is limited by economical theory concerning with the value and the mark of estimated parameters supporting it by statistical standards secondly, that is we will conduct many tests to show the best employment of the equation.

$$\text{Log}Y_1 = - 8.98 + 0.278\text{Log}X_1 + 0.251\text{Log}X_2 + 1.53\text{Log}X_3 + 0.58\text{Log}X_4$$

$$t * (-2.52) \quad (2.11) \quad (1.93) \quad (2.67) \quad (1.41)$$

$$+ 0.58\text{Log}X_5$$

$$(1.21)$$

$$R^2 = 63.3 \% \quad R^{-2} = 56.2 \% \quad F = 5.33 \quad D.W = 1.91$$

FIRST: THE ESTIMATION OF QUANTITATIVE ANALYSIS RESULTS OF THE INFLUENCING FACTORS IN WHEAT PRODUCTION DURING THE PERIOD (1995-2016):

It was found through the above equation the moral three variables, which are (X1, X2, X3) after doing the test (T) under the moral level (0,05) and explain (63,3%) from the changes made by independent variables in the dependable variable through the value of the coefficient determination (R^2), the ratio is still (36,7%) due to other factors that were not measured in this study and were involved under the so- called random variable. The test (F) pointed out the morality of function as a whole and the value of (D.W) calculated (1,91). this is an evidence that there is no Autocorrelation problem between random variables in the estimated model, but for the parameter mark that reflect the nature of the relationship between the dependent variable and independent variables, which can be explained as follows :where (X1) size of domestic demand, its parameters mark is positive that indicates the random relationship between the independent variable(X1)size of domestic demand and the dependent variable (Y1) production of wheat crop, which its flexibility that amounted (0,278) indicated that if the size of domestic demand decreasing by (1%) the production of wheat crop increases by (0,278%) to the increasing in populations, which leads to demand increasing of wheat because the wheat is main necessary commodity, which can not be dispensed with or replaced as well as being the first material in making the loaf bread, which is considered as a daily commodity for Iraqi individual as well as because of the expansion of industries that need wheat in the manufacture of its products such as pastries and sweets and others. This encourages farmers to increase their production of this crop to meet growing domestic demand and to dispense with imports. As for the (X2) mechanical technology has been positive parameter mark that indicates the positive relationship between (Y1) and dependent variable and its flexibility, that amounted (0,251%) indicated that if the mechanical technology increases by (1%), the production of wheat crop increases by (0,251%). This means increasing knowledge and experience in the productive process. The use of modern technologies such as tractors, harvesters and other sophisticated machines leads to increased efficiency in preparation and cultivation of land as well as harvested and that these things with no doubt will achieve increasing production and reducing costs in the productive process. While (X3) the cultivated area, parameter mark was positive, which indicated the positive relationship between this variable and dependent variable (Y1) and its flexibility that amounted 1,53 indicated that if the cultivated area increases by (1%) the production of wheat crop increases by (1,53%) because the wheat crop in Iraq is cultivated with a very enormous areas, which is based on horizontal expansion and land reclamation or addition of new lands that are not exploited to the cultivated area of wheat crop and thus increase the cultivated area of this crop and this is reflected finally on the increase in production of wheat. As for (X4) the share of hectare of agricultural work, the study proved that this statistical variable is insignificant at the level because wheat cultivation is carried out in a very enormous areas because using the workforces leads to an increase in the costs of production and irregularity of cultivation of the land and thus reflected on the production, but the workforces are used to manage the agricultural machineries such as harvesters and tractors and that increasing the workforces more than what one hectare needs, will lead to a convincing unemployment and thus will effect on the production of wheat. As for (X5) the size of the agricultural loans, the study proved that this statistical variable was insignificant at level (0,05), as this is due to the small size of this type of loans because of the reluctance of a large number of farmers to use these loans in the fields of agricultural investment and even loans that are taken and a large proportion of them are spent in nonagricultural businesses.

SECOND: THE ESTIMATION OF THE QUANTITATIVE ANALYSIS RESULTS OF THE INFLUENCING FACTORS OF THE FOOD GAP DURING THE PERIOD (1995-2016):

The parameters of the variables were changed because the failure in some statistical and standard tests, therefore we choose the function which has the more significant estimation of the variables with different mathematical formats. The logarithmic function was chosen because it represented the best through passing the statistical and standard tests according to the following equation:

$$\text{Log}_2 Y = 1.43 - 0.146 \text{Log} X_1 + 0.795 \text{Log} X_2$$

| | | | |
|------------|--------|---------------|-------|
| t^* | 0.76 | 1.87 | 2.01 |
| $R^2 = \%$ | 79.3 | $R^{-2} = \%$ | 73.9 |
| F | 20.9 | | $D.W$ |
| | = 1.87 | | |

The previous equation shows the significance of two variables (X_2, X_1) after testing (t) under a significant level (0,05) and could be explained (73.9%) of the changes caused by independent variables in dependent variable through the value of the determination parameter (R^2), the ratio (26,1%) is still due to other factors that were not measured in this study and is involved under the so-called random variable. The test of (F) indicated to the significance of the whole function as for the value of ($D.W$) calculated, which amounted (1,87) failed to occur in the area of uncertainty, it is closer to the area of acceptance not to rejection and there is no self – correlation problem among the values of random variables, as for the parameters mark which reflects the nature of relationship between the dependent variable and independent variables and it could be explained as follows: where (X_1) estimated production quantity. The study proved the significance of this variable at a significant level (0,05) where we find that the negative parameter mark for the estimated production (X_1) reflected the significant and negative relationship of this variable where its parameter flexibility amounted (-0,146) unit, which means that increasing the estimated production with ratio (1%) unit will result in reducing the dependent variable (food gap of wheat crop) with ratio (0,146%) unit and this is logical in terms of economic theory and it is evidence of the importance of increasing in production size. As for (X_2) average per capita income, where the parameter mark is positive, indicating the positive (extreme) relationship between this variable and the dependent variable (X_2) of wheat crop, its amounted elasticity (0,795) that if average per capita income increases by (1%) the total consumption increases by (0,795%) and thus effects on the food gap. This is because increasing the average per capita income leads to an increase in the purchasing power of the individual for this crop to use it in addition of making loaf bread in other uses, which may be perfectionist such as manufacture of pastries and sweets (desserts) and others and the consumer may look for the best qualities and thus will result in total consumption increasing of wheat.

THIRD: THE ESTIMATION OF QUANTITATIVE ANALYSIS RESULTS FOR INFLUENCING FACTORS IN RICE FOR THE PERIOD (1995-2016) :

The parameters of the variables included in the model were estimated and because of the failure in some statistical and standard tests, we tested the estimated function of the most significant variables with different mathematical formulas, the double logarithmic function was chosen because it represented the best through its tests of statistical, standard and economic tests according to the following equation:

$$\text{Log}_1 Y = 4.58372 + 0.6529 \text{Log} X_2 + 0.17205 \text{Log} X_2 + 0.38489 \text{Log} X_3$$

| | | | | |
|---------|---|--------|--------|--------|
| $(T) =$ | (1.73) | (3.47) | (2.78) | (2.78) |
| | $+ 0.14455 \text{Log} X_4 + 0.06077 \text{Log} X_5$ | | | |
| | (1.87) | (1.17) | | |

$$R^2 = \%63.29, R^{-2} = \%54.71, F = 5.23, D.W = 1.862$$

The significance of only four variables is indicated (X1,X2,X3,X4) through the test of (T) under the significant level (0,05) and the significance of one variables is not indicated (X5). It is possible to explain (54,71%) of the changes caused by independent variables in dependent variable through the value of the determination parameter (R²), the remaining (45,29 %) is outside the model variables that have not been measured, which is the random variable. As for (F) test indicated the significance of the whole function, while the (D.w) test which is amounted (1,862), which is closer to the accepting and there is no self- correlation problem. Klein's test also proved that there was on multiply linear correlation problem, which could be explained as follows :

Where (X1) the size of domestic demand, which its parameter mark was positive indicating the extreme (positive) relationship between the independent variable (X1) the size of domestic demand and the dependent variable (Y1) the production of rice crop, its amounted flexibility (0,65729) indicated that if the size of domestic demand increase by (1%) the production of rice crop decreasing by (0,65729%) due to the increasing in population size, which leads to the increasing demand of rice because the wheat is main and necessary commodity. As for (X2) the parameter mark of the mechanical technology was positive indicating the extreme relationship between it and the dependent variable (Y1), its amounted elasticity (0,17205) indicated that if the mechanical technology increase by (1%) the production of rice crop increases by (0,17205 %) and that means increasing in knowledge and experiences in productive process and using modern technology production tools such as tractors and harvesters and other sophisticated machines leads to efficiency increasing in production increasing. As for (X3) the parameter mark of the cultivated area was positive indicating the positive (extreme) relationship between this variable and the dependent variable (Y1), its amounted elasticity (0,38489) indicated that if the cultivated area increases by (1%) the production of rice crop increases by (0,38489 %) because the rice crop in Iraq is cultivated in a very enormous areas, namely is based on horizontal expansion, while the variable of the share of hectare from agriculture work (X4), its amounted elasticity (0,14455) unit namely the increasing of agricultural work with the proportion (1%) unit will lead to increase the dependent variable (0,14455 %) unit. this is considered logic from the in term of economic theory. As for (X5) the size of the agricultural loans, the study proved the insignificance of this statistical variable at the level (0,05) due to the small size of this kind of loans because of the reluctance number of farmers from using them in the fields of agricultural investment for many reasons, that the most of loans are used in nonagricultural businesses.

FOURTH: THE ESTIMATION OF THE QUANTITATIVE ANALYSIS RESULTS FOR INFLUENTIAL FACTORS OF FOOD GAP OF RICE FOR THE PERIOD (1995-2016) :

The variables parameters were estimated, and because of the failure in some statistical and standard tests, we chose the function with the most significant variables with different mathematical formulas, where the double logarithmic have been chosen because it represented the best through passing the statistical, standard and economic tests according to the following equation :

$$\text{Logy}_2 = 12.27504 - 1.6052 \text{LogX}_1 + 0.6529 \text{Log X}_2$$

$$T = \begin{matrix} (2.79) & (-2.84) & (1.47) \\ R^2 = 73.3 & , R^{-2} = 65.8 & , F = 12.84 & , D.W = 1.88 \end{matrix}$$

Through the above equation, the significance of the variable (X1) is indicated through the test of (T) under the significant level (0,05), which could explain (65,8%) from variables caused by the independent variables in dependent variable, but what remained (34,2%) were outside the model variables that represent the random variable. The (F) test indicated the significance of the whole function, as for the D.w test proved its value that there is no self- correlation problem, kien test also indicated that there is no multiply linear correlation. Where we find the parameter mark is negative for the estimated production (X1), the significant and negative relationship is reversed for this variable, its parameter elasticity amounted around (-1,6052) unit, which means that increasing in estimated production by (1%) unit will lead to decline the dependent variable (the food gap of rice crop) by (1.6052%) unit and this is logically regarded in terms of economic theory. this is an evidence

on the importance of the increase in size production. As for (X2) the average per capita, its significance is not indicated due to the purchasing power is not enough, and most of the areas that specialized in cultivating this crop, are central and southern of Iraq. The most important conclusion of the research is that the production of wheat and rice crops in Iraq suffers from fluctuation during the study period, due to fluctuation in productivity of donum because most cultivated crop. The consumption of these crops is increasing because of the increase in population and the local production is insufficient to meet the need for domestic demand, so there is a gap between the produced quantities and consumed quantities and this gap is processed by imports, as well as the cultivated area is played an important role in production of cereal crops, where the increase of cultivated area from wheat will increase the crop quantity. Finally, the raise in average per capita income with the decline of wheat price encouraged on consumption of this crop due to the increasing in purchasing power of the individual, while not in the rice crop. Based on the findings of the research, the research recommends the use of modern implant techniques that increase the productivity of the donum through expanding the use of modern irrigation system such as supplementary irrigation, which proved its successful because it reduces the dependence on rain waters and to work for decreasing the food gap through following the styles and methods in the preparation of modern production plans, which works to raise the productivity and thus increase supply of cereal crops (grain crops) as well as uses the modern production means, which are represented by the sophisticated agricultural machines like tractors and harvesters that have a good role in raising the productivity efficiency of the area unit. It is necessary to direct the agricultural policy to expand horizontally through the reclamation of unexploited lands, which is reflected in the production increasing, as well as pay attention to the human element technically and administratively through the guidance seminars, which increase his knowledge in the use of modern machines that has its impact on raising the efficiency of the machine, which positively reflected on production, and encourage the farmers to increase their production through the support provided to them like the provision of necessary loans and sophisticated production requirements represented by improved seeds and fertilizers of high productivity, which leads to increase production, and gradually reducing imports from these crops and working to establish a strong regularity system that monitors agricultural loans to be spent in the right field.

REFERENCES

- Alkelidar, Qusai and Saad Aziz Nasir and Ahlam Kamil Ismael (2010) Economical analysis for the future expectations to produce and consume the wheat in Iraq for the period (2010-2020) by using the convenient expectations, Alanbar journal for Economic Science,8(4) special issue of the conference:264-280
- Arabic Organization for Development,(2009) A comprehensive study to document agricultural policies in Arab Countries, Arabic Organization for agricultural Development, Alkartom-Alsudan page 16
- Abdullah, Daoud Fahd and Khalid Yassin al-Zubaidi (2016) , Economic and Standard Analysis of the Agricultural Policy of the Strategic Crops in Iraq 1990-2013, , Tikrit Journal of Agricultural Sciences Volume (16) Issue (1).
- Ali, Awad Ali and Jedoua Shehab Ahmad (2016) Economic Study of Investment in Iraq for the Period 1997-2011, Tikrit Journal of Agricultural Sciences Volume (16) Issue (1).
- Alnuami, Salim Younis and Lora Basim Saor,(2008) Impact of subsidy and consumption policy of wheat crop in Iraq for the period (1985-2005), journal of Mesopotamia agriculture, volume 6 No.1,page 110
- Anony mons (1999) Poverty and Hunger : Issues and Opinion For Food Security in Developing Countries. World Bank, Wash Ingot D.C, PP.24.
- Arabic Organization for Agricultural development(1999), Alternatives to Establish an Arabic Regional System Emergency cereals inventory Khartoom August ,pp 104

- Bahosh Sabiha (1998, agriculture policies in Algeria and their role in achieving food independence, Master Thesis, Altayseer University, Algeria, page
- Thalag, Adnan Ahmed and Ahmed Hashim Ali and Waleed Ibrahim Sultan (2012) The impact of the agricultural policy on food security in a selected Arab Countries with special reference of Iraq (The model of wheat crop), journal of Mesopotamia, College of Agriculture and Forestry, Mosul University 40 the attachment (2),page 172
- Thamer, Saz Abbas and Sahab Ayed Al Ajili (2016) (Level of Leadership Skills of Agricultural Extension Workers), Tikrit Journal of Agricultural Sciences Volume (16) Issue (1).
- The Republic of Iraq, Central Organization for Statistics and Information Technology.

واقع انتاج محاصيل الحبوب الرئيسية في العراق وأثرها على الامن الغذائي للمدة 1995-2016

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المستخلص

يهدف البحث إلى دراسة واقع الانتاج والامن الغذائي في العراق لأهم السلع الاستراتيجية لاسيما محصولي (القمح ، الرز) التي هي موضوع الدراسة اذ أصبحت قضية الأمن الغذائي من أهم القضايا المثارة اليوم في ظل الأزمة الغذائية التي تمر بها معظم الدول والتي تمثلت في تناقص أهم السلع الغذائية الرئيسية وتزايد الطلب عليها ، لذا اعتمد البحث على فرضية مفادها أن التذبذب الحاصل في إنتاج هذه المحاصيل يقابله زيادة في الكميات المستهلكة يعود لعدة عوامل اقتصادية وانطلاقاً من هذه الفرضية اعتمد البحث في منهجه على أسلوب الربط بين اتجاهين، الاسلوب الكمي والوصفي ، الذي استند إلى طرائق الاقتصاد القياسي وأساليبه حيث استخدم طريقة المربعات الصغرى ذات المرحلتين (2.S.L.S) اذ تم استخدام في المرحلة الاولى من التحليل الكميات المنتجة (القمح والرز) متغيراً معتمداً وكل من (حجم الطلب المحلي، التكنولوجيا الميكانيكية ، المساحة المزروعة ، نصيب الهكتار من العمل الزراعي و حجم القروض الزراعية) متغيرات مستقلة اما في المرحلة الثانية فقد تم استخدام كل من (كمية الإنتاج المقدر ، متوسط دخل الفرد) متغيرات مستقلة وحجم الفجوة الغذائية متغيراً معتمداً ، وتوصل البحث إلى ان هناك فجوة استهلاكية من هذه المحاصيل وإن استهلاكها في تزايد وذلك بسبب الزيادة الحاصلة في أعداد السكان مما أدى الى ارتفاع في حجم الفجوة الغذائية اذ يتم معالجتها عن طريق الاستيراد مما يزيد في اعباء الميزانية العامة للدولة ؛ ومن المتوقع إن تزداد حدة المشكلة الغذائية مستقبلاً في ظل الاتجاهات الاقتصادية الدولية التي تهدف إلى تحرير التجارة العالمية وعولمة الغذاء وبناءً على ما تقدم من استنتاجات توصل اليها البحث توصي الدراسة بالوصول إلى مستويات مرضية من الاكتفاء الذاتي من خلال زيادة الانتاج وذلك بتضافر جهود الدولة مع المزارعين للعمل على وضع استراتيجيات متكاملة للوصول الى الأمن الغذائي وذلك بالنهوض بواقع القطاع الزراعي من خلال الاستخدام الامثل والرشيد للموارد الطبيعية واستخدام الأساليب الحديثة في الزراعة لمواجهة مشكلة الغذاء .

الكلمات المفتاحية: انتاج، محاصيل الحبوب، الامن الغذائي.