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## Egyptian Food Security of Edible Oils

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### ABSTRACT

The research aims mainly to study food security of edible oils in Egypt through studying of several sub-goals represented in: estimating models of general trends function for some economic indicators of edible oils in Egypt during the period (2001-2015), studying of the most important indicators of food security of edible oils, estimating the size of the food gap of edible oils and knowledge of the most important factors responsible for it, and studying the policies and tools to achieve food security of edible oils in Egypt. Descriptive and quantitative analysis were used. The study depends on secondary data, which collected from local and foreign sources during the period (2001 – 2015). A study models of the general trend function for economic indicators showed that each of the total domestic production of edible oils, domestic consumption, the average per capita consumption, the amount of edible oils imports, food gap of edible oils, the price of Egyptian imports of edible oils and periods of coverage of domestic production found that all of these variables has taken a general trend upward statistically significant at the level of probability (0.01) with the exception of a variable of coverage period of local production for daily consumption, capita consumption and food gap of edible oils which took a general trend upward statistically significant at 5% level, and also did not identify the statistical significance of the variables of self-sufficiency rate and the period of coverage of imports for daily consumption, while the annual growth rates differed according to each variable.

The conduct study shows that the most important variables specific to the food gap of edible oils is annual average per capita consumption of edible oils which the impact of this variable on edible oils gap be positive.

The study showed that the strategic stock for edible oils is estimated at 173 thousand tons and the average local consumption of edible oils is estimated at about 1.5 million tons during the study period (2001-2015), thus estimated food security of about 0.21 is therefore required to take various actions which lead to increase the size of the strategic stock of edible oils enough for half of it needs for domestic consumption even come close to the value of suitable coefficient of edible oils food security.

The study showed that the policies and tools to achieve edible oils food security include horizontal agricultural development policy, vertical agricultural development policy, the policy of rationalizing the consumption of edible oils, policy of consumer subsidy of edible oils, and the policy of diversifying sources of imported edible oils. In the light of the results of the study illustrated by research it has been possible to reach some of the following recommendations:

- 1- Increasing of edible oils production through the expansion of oil crops which grow in the new land.
- 2- Increasing of edible oils productivity crops through dissemination of edible oils varieties of high productivity and to suit every center of administrative centers in Egypt.
- 3- Rationalizing the consumption of edible oils during dismiss the size of it.
- 4- To achieve food security has to be the need to develop awareness programs for the application of planning policy breeds where it is one of the most important determinants of the demand for Egyptian imports of edible oils.
- 5- It is important to put a national strategy to increase the self-sufficiency ratio of edible oils with the need to import and distribute the amounts of diversification between different sources in order to avoid what might happen from political pressure in favor of the Egyptian economy is in the case of international political conditions change.
- 6- It is necessary to study the reduction commitments of subsidy granted to the production and export in the edible oils-exporting countries in order to reduce the negative effects on the Egyptian saving.

**Key words:** Food gap; Food security; Edible oils; Egypt

### **Introduction:**

The subject of food security is growing interest currently in most parts of the world which suffers from gap between the production and consumption of main food commodities. This gap may be caused by variables such as the continued increase in the number of population, and the inability of agricultural resources in those countries to adequate production of those commodities to cope with these number of its citizens and residents have food for their needs, in addition to increasing food prices in world markets, leading to higher prices in the importing local markets.

It should be noted that the concentration of the food agricultural production surplus with the limited number of developed countries in North America, Europe and direction those countries to consider food surplus a strategic arms to impose political trends for these countries to other importing countries it make the problem of providing food party a main influential in achieving the national security of those importing countries the largest amount of food needs. The food security has become a key component of national security components.

The importance of food security issues has doubled after the application and implementation of the agreements of the World Trade Organization (WTO) own accord agriculture and related cancellation supporting of food producers and consumers, as well as the abolition of food export subsidies and converting all quantitative restrictions in trade to non-quantitative restrictions which led to increase the value of it imports with a large number of food commodities.

This means that the concept of food security is no longer just to achieve self-sufficiency as political subject, it has become a guaranteed socially aims to food sufficiency, health for all members of society without discrimination which is achieved at the economic level by addressing the balance of trade for agricultural commodities on the basis of supplying the principle of comparative advantage, and thus became the extent to which the consumption of food nutritional adequacy of the individual criterion for the success of development, considering that human development means first, to provide a healthy level appropriate and diet of individuals, has become upon the Arab countries to face these challenges in light of regional and international rapid changes.

According to figures during the period of study (2001 - 2015) the average of amount edible oils production in Egypt is about 272.08 thousand tons, while the total consumption of edible oils is about 1147.85 thousand tons, and up the food gap of edible oils is approximately 856 thousand tons, the self-sufficiency rate of about 24.31 % and the average per capita consumption of edible oils is about 15.13 kg per year.

The research problem is that despite the increase achieved in the production of edible oils crops in Egypt from the development and modernization of farming methods, however there are still a gap between edible oils production and consumption was estimated at 856 thousand tons during the previous period, and the amount of edible oils imported about 898.5 thousand tons to cover the gap between production and consumption of Edible oils. Due to limited cultivated area and water resources in Egypt at the same time of increasing aggregate demand on edible oils as a result of increasing of the population and increasing level of income which would entail an increase of the food gap of edible oils, which is the inability of the domestic production of edible oils to meet the needs of local consumer of it, and are covered edible oils gap through edible oils imports, which negatively affects on the Egyptian agricultural trade balance and then Egyptian balance of payments.

### **Research objectives:**

The main objective of this research is studying of the food gap and the food security of edible oils in Egypt, this objective can achieve by achieving the following objectives:

- 1- Estimating models of general trends functions for some economic indicators of edible oils in Egypt during the period (2001-2015) .
- 2- Estimating food gap of edible oils and knowledge of the most important factors responsible on it .
- 3- Studying of the most important indicators of food security for edible oils in Egypt .
- 4- Studying of policies and tools to achieve food security of edible oils in Egypt.

### **Research methodology and sources of data::**

The research based on each of descriptive and quantitative analysis represented in the estimation of some models directivity of economic variables in question in its linear models and a semi logarithmic in the dependent variable for calculating the annual growth rates of these variables, as well as the method was

used multiple regression analysis to determine the most important factors responsible for the size of the edible oils gap, the use of certain economic indicators to measure the impact of factors affecting the coefficient of food security of edible oils in Egypt.

The research depends on secondary data published from different bulletin of agricultural economy issued by the Ministry of Agriculture and land reclamation, and the Central Agency for Public Mobilization and Statistics, as well as bulletins of the United Nations Food and Agriculture Organization (FAO) were used, also some research and scientific communications and some foreign references associated with the subject of the search, as well as the use of the Internet to get the international information related to the search subject.

## Research results and discussion

### **- First: The statistical analysis of some economic indicators of edible oils in Egypt during the period (2001 - 2015):**

A study models of the general trend function for economic indicators showed that each of the total domestic production of edible oils, domestic consumption, the average per capita consumption, the amount of edible oils imports, food gap of edible oils, the price of Egyptian imports of edible oils and daily local consumption, and found that all of these variables has taken a general trend upward statistically significant at the level of probability (0.01) and (0.05), and also did not identify the statistical significance of the variables of self-sufficiency rate and the period of coverage of production for consumption , while the annual growth rates differed according to each variable (table I). The following review of the results of these models :

**1- Evolution of edible oils production:** The extraction of edible oils in Egypt from several sources of oil crops, including traditional sources, which are grown in order to extract edible oils from seeds and draws such a high percentage of oil up nearly 58%, such as peanuts, sesame, sunflower, soybean, corn, canola and other, in addition to some non-traditional sources such as oil, which draws as a by-product, such as cotton, flax and olive harvest as well as some little significance other crops, but this by-product, such as cotton seed oil output from the seed contributes about 42% of edible oils used in Egypt. The state is seeking the adoption of an agricultural policy aimed at solving the problem of food security of the Egyptian edible oils.

Data in table (I) shows that the edible oils production in Egypt fluctuated from a minimum of approximately 142.1 thousand tons in 2001 and a maximum of around 426.6 thousand tons in 2015 with an annual average of about 272.08 thousand tons during the study period (2001 - 2015), and the production of edible oils took a general trend statistically significant at 1% and the amount of the annual increase amounted to about 22.1 thousand tons, and the annual growth rate of about 8.4% .

**2- Evolution of domestic consumption of edible oils:** It is not surprising that domestic consumption of edible oils take a general trend upward statistically significant at 1%, where the annual average growth rate of about 4.14% with an annual average of approximately 855.99 thousand tons, and if coupled with the passage of time to grow steady in the population, this will lead to a steady increase in the consumption needs of edible oils in various forms .

**3- Evolution of per capita consumption of edible oils:** Per capita consumption of edible oils in Egypt ranged between a minimum of approximately 8.5 kg per capita in 2010 and a maximum of around 19.2 kg per capita in 2007 with an annual average of about 15.13 kg per capita during the study period (2001 - 2015 ) , and the annual average per capita consumption of edible oils take a general trend statistically significant at 5 % and the amount of the annual increase amounted to about 0.41 kg per capita, and the annual average growth rate of about 2.7 % .

**4- Evolution of the amount of Egyptian edible oils imports:** The problem of increasing Egyptian edible oils imports consider from the fundamental problems facing the Egyptian economy because of its negative effects on Egyptian agricultural trade balance and then Egyptian balance of payments, specially in light of increased prices of imports of edible oils in the world market, it which requires expansion in the cultivation of edible oils crops in Egypt, but that the policy of horizontal development facing several difficulties, most notably the great competition between the area of edible oils crops and the rest of other agricultural crops on the farmland. The Egyptian edible oils imports have an important role to cover the gap between domestic production and the consumer needs of edible oils. Table (1) shows that the edible oils imports ranged from a minimum of approximately 370.0 thousand tons in 2010 to a maximum of approximately 1185.4 thousand tons in 2007 with an annual average of about 898.5 thousand tons during the study period, and the Egyptian imports of edible oils took trend years statistically significant at 5 % and the

amount of the annual increase amounted to about 38.6 thousand tons, and the annual growth rate of about 4.2% .

**5- Evolution of Egyptian price imports of edible oils:** Egyptian price imports of edible oils is particularly important as the increasing negative impact on Egyptian agricultural trade balance and then Egyptian balance of payments, and review the data in table (II) shows that the Egyptian price imports of edible oils

**Table (I): Evolution of imports, coverage periods of local production and imports daily consumption of edible oils in Egypt during the period (2001 – 2015)**

Year	Production (10 <sup>3</sup> tons)	Imports (10 <sup>3</sup> tons)	Consumption (10 <sup>3</sup> tons)	Coverage period / day			Total period	Capita consumption kg
				Daily local consumption (1)	Local production for consumption (2)	Imports for consumption (3)		
2001	142.1	701.40	814.4	2231.2	63.7	314.3	378.0	12.5
2002	168.7	620.1	779.8	2136.4	78.9	290.2	369.1	11.8
2003	188.8	606.1	794.9	2177.8	86.7	278.3	357.2	11.8
2004	174.4	620.1	768.5	2105.5	82.8	294.5	377.3	11.2
2005	147.1	866.80	1104.3	3025.5	48.6	317.5	335.1	15.8
2006	211.8	1050.10	1276.7	3525.2	50.1	297.9	348.0	17.9
2007	197.7	1185.40	1401.9	3840.8	51.5	308.6	360.1	19.2
2008	299.4	500.0	792.4	2170.9	137.9	230.1	368.0	10.6
2009	294.1	1153.3	1397.4	3925.3	74.9	293.8	368.7	18.4
2010	290.0	370.0	657.5	1801.4	161.0	205.4	366.1	8.5
2011	338.9	1182.2	1452.0	3978.1	85.2	297.2	382.4	18.2
2012	390.6	1180.50	1460.0	4000.0	97.7	295.1	392.8	17.9
2013	406.1	1177.00	1510.0	4136.9	98.2	284.5	382.7	18.2
2014	404.7	1134.50	1476.6	4045.5	100.1	280.4	380.5	17.4
2015	426.8	1130.70	1531.4	4146.3	102.9	272.7	375.6	17.6
<b>Annual average</b>	272.08	898.5	1147.85	3149.12	88.68	284.03	369.4	15.13
<b>Min. limit</b>	142.1	370	657.5	1801.4	48.6	205.4	335.1	8.5
<b>Maxi. limit</b>	426.6	1185.4	1531.4	4136.9	161.0	317.5	392.8	19.2
<b>Amount of change</b>	22.1**	38.6*	54.79**	148.78**	3.05*	N.S	N.S	0.41*
<b>Rate of growth %</b>	8.4**	4.2*	4.8**	4.80**	3.61*	N.S	N.S	2.7*

**Note:** edible oils include vegetable oils, soybean oil, palm oil, olive oil, maize oil, sesam oil, groundnut oil and palm kernk oil

(1) Daily domestic consumption = domestic consumption / number of days per year.

(2) The period of coverage of local production to daily consumption = domestic production / daily domestic consumption.

(3) The import coverage daily consumption = quantity of imports / domestic consumption daily.

\*\* : Significant at 0.01

\* : Significant at 0.05

N.S.: Not significant

**Source:** Compiled and calculated from (1) The Central Agency for Public Mobilization and Statistics [www.capmas.gov.eg](http://www.capmas.gov.eg).  
 (2) Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, central administration agricultural economy, food balance Egypt, different volumes.  
 (3) [www.faostat.org](http://www.faostat.org)

ranged between a low of about 775.4 dollars per ton in 2004 and a maximum of around 2966.8 dollars per ton in 2011 with an average annual of about 1738.5 dollars per ton, and the Egyptian price imports of edible oils took a general trend statistically significant at 1% and total amount of the annual increase of about 161.9 dollars per ton, and the average annual growth rate of about 10.2%.

**6- Evolution of the edible oils food gap in Egypt:** The subsequent increase in income level classes of Egyptian people and increasing number of population consider from the most important factors that affect on increasing edible oils food gap. The edible oils food gap in the inability of the domestic production of edible oils to cover the consumer needs, for that gap, it is considered from the most important problems faced by Egyptian planners and policy economic makers because edible oils are one of the strategic commodities in the world market, specially after the direction to be used in the production of biofuels, and for this it must identify how the possibility of achieving self-sufficiency ratio of edible oils to study the size of edible oils gap and the factors influencing them to determine the extent of the possibility of reducing the edible oils gap in the future years. Table (II) shows that the Egyptian edible oils food gap ranged between a minimum of approximately 368 thousand tons in 2010 to a maximum of about 1204 thousand tons in 2007 with an annual average of approximately 856 thousand tons, and took the Egyptian gap of edible oils general trend statistically at 1% and annual increase amounted to approximately 36 thousand tons, and the annual growth rate of about 4.14 %.

**- Second: Determinants of Egyptian edible oils food gap :**

The edible oils food gap determines by production and domestic consumption which covers much of the imports par with it, and assumed that the change in production will be negative impact reverse direction on the amount of imports from the country, while the effect of the change in consumption will have a positive effect in the same direction, as can be theoretically, the variable of Egyptian price imports of edible oils as one of the determinants of that gap and is supposed to be a negative impact on that gap.

**- Standard estimation for the most important variables specific to the edible oils food gap :** To study and measure the impact of some of the variables specific to the edible oils food gap was estimated relationship between the amount of the gap of edible oils (thousand tons) as the dependent variable, and all of the domestic production of edible oils ( $X_1$ ) (thousand tons), and the annual average per capita consumption of edible oils ( $X_2$ ) (kg) and the average real price of Egyptian imports of edible oils ( $X_3$ ) (\$ / ton) during the study period (2001-2015) and found that the best mathematical model reflects that relationship is the following equation:

$$Y = - 303.91 + 76.65 X_2$$

$$(- 3.54)** (13.86)**$$

$$F = 191.95 \quad R^2 = 0.94$$

It is clear from the above equation that the impact of  $X_2$  on edible oils gap be positive as the change in the amount of per capita consumption of edible oils lead to a change in the amount of that gap in the same direction.

**- Third- Egyptian food security of edible oils :**

Growing interest in the topic of food security in most parts of the world is necessary which suffers from a gap between production and consumption of main food commodities that may be caused by variables such as the continued increase in the number of population and increasing individual income levels, and the inability of the agricultural resources in those countries on the production enough of those commodities to meet these numbers of the population, in addition to the increase in food prices in the world markets, leading to higher prices in local markets have imported .

It should be noted that the concentration of agricultural production surplus, food has a limited number of developed countries in North America, Europe, and the direction of those countries to be regarded as surplus food a strategic nuclear weapons to impose political trends for these countries to other importing countries it makes the problem of providing food a mains factor in achieving the national security of those importing the largest countries amount of food, which means that provides the ability to buy food

from the world surplus does not necessarily mean access it easily, and therefore, food security has become a key component of national security .

The interest of food security issues was increased after the application and implementation of the World Trade Organization agreements, specially the agreement on agriculture and the related cancellation subsidy producers and consumers of food, as well as the elimination of export subsidies of food and convert all quantitative restrictions in trade restrictions which has led to an increase the value of imports for a large number of food commodities .

**Table (II): Development of production, consumption, edible oils gap and Egyptian price import during the period (2001-2015)**

Year	Production (10 <sup>3</sup> tons)	Consumption (10 <sup>3</sup> tons)	Gap (10 <sup>3</sup> tons)	Price imports (\$/Ton)	Self sufficient %
2001	142.1	814.4	672.3	927.2	17.5
2002	168.7	779.8	611.1	906.4	21.6
2003	188.8	794.9	606.1	841.1	23.7
2004	174.4	768.5	594.1	775.4	22.7
2005	147.1	1104.3	657.2	1057.4	13.3
2006	211.8	1276.7	1064.9	1046.1	16.6
2007	197.7	1401.9	1204.2	1253.8	14.1
2008	299.4	792.4	493.0	1214.1	37.8
2009	294.1	1397.4	1103.3	2667.7	21.0
2010	290.0	657.5	367.5	2539.4	44.2
2011	338.9	1452.0	1113.1	2966.8	23.3
2012	390.6	1460.0	1069.4	2148.8	26.7
2013	406.1	1510.0	1103.9	2849.7	26.9
2014	404.7	1476.6	1071.9	2577.9	27.4
2015	426.8	1531.4	1104.6	2306.1	27.9
<b>Annual average</b>	272.08	1147.85	855.99	1738.5	24.31
<b>Min. limit</b>	142.1	657.5	367.5	775.4	13.3
<b>Max. limit</b>	426.6	1531.4	1204.2	2966.8	44.2
<b>Amount of change</b>	22.1**	54.79**	35.98*	161.9**	N.S
<b>Rate of growth %</b>	8.4**	4.8**	4.14*	10.2**	N.S

**Source:** Compiled and calculated from: (1) Central Agency for Public Mobilization and Statistics

[www.capmas.gov.eg](http://www.capmas.gov.eg)

(2) Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, central administration agricultural economy, food balance Egypt, different volumes.

(3) [www.faostat.org](http://www.faostat.org)

This section deals with an overview of the most important indicators of edible oils food security in Egypt. This is done through the review and analysis of the period of coverage of all domestic production of Egyptian and Egyptian imports annually for national consumption of edible oils, as well as to estimate the coefficient of food security for the period covered by statistical analysis research (2001-2015), and then a review of some aspects of the policies and the tools to achieve the Egyptian food security of edible oils as a top priority for its association with the lives of all Egyptians, because the most important one of the main sources for cheap energy and food cooking .

**- The most important indicators of Egyptian food security of edible oils:**

This part of the study deal with the most important indicators of food security for edible oils in Egypt during the study period (2001 - 2015) to calculate the coefficient of food security for edible oils commodity, which is represented in each of the Egyptian production of Edible oils, which is about 426.8 thousand tons in 2015, domestic consumption of about 1531.4 thousand tons in 2015, and leads to the fact that the average per capita consumption of edible oils approximately 17.6 kg a year, and the consequences of that the edible oils gap is nearly 1105 thousand tons in 2015 .

The length of the period of cover production and decrease the period of coverage of imports for the national consumption which consider good step indicate the direction to achieve food security somewhat, and that indicates a reduced reliance on imports from world marketing .

**1- Egyptian daily consumption of edible oils:** Table (I) showed the Egyptian daily consumption of edible oils during the period (2001-2015) that ranges from a minimum of about 1.8 thousand tons in 2010 and a maximum of about 4.13 thousand tons in 2013 with an annual average of about 3.14 thousand tons during the study period and the Egyptian daily consumption of edible oils took a general trend upward statistically significant at the 1% which estimated at about 148.78 tons, representing about 4.73 % of the annual average of the Egyptian daily consumption of edible oils and the annual average growth rate of about 4.8%.

**2- The period of cover Egyptian production to daily consumption of edible oils:** This period knows as a period which can be covered by the Egyptian production of edible oils for the needs of daily food for the population, and can be seen reviewing a period during the years (2001 - 2015) it ranges from a minimum of about 48.6 days in 2005 and a maximum of about 161 days in 2010 with an annual average of about 88.7 days table (I). The period of cover the Egyptian production for domestic consumption of Edible oils take an increasing general trend during the period referred to statistically significant at the 5% estimated at 3.05 day and the annual growth rate was about 3.61 %.

**3- The period of cover of Egyptian imports for daily consumption of edible oils:** This period knows as the period which can cover the annual import of edible oils to daily nutritional needs of the population, which can be seen during the review period (2001 - 2015), they range from a minimum of about 205.4 days in 2010 and a maximum of about 317.5 days in 2005 with an annual average of about 284.03 days during the study period and shows non-significant equation of the general trend for the study period covering the Egyptian imports for daily consumption of edible oils -Table (I).

**- Fourth: Determination of Egyptian strategic stock from edible oils :**

The strategic stock for a commodity knows that the quantities held by the government and the private sector to meet the expected demand for domestic and export on this item during a future period of time. It is estimated that the strategic stock during a certain time period that the outcome of the entire surplus directed to the development of the strategic stock in some years and the amount of the deficit, which is withdrawn from inventory during the other years, which shows the deficit in domestic consumption. That is maintaining a strategic stock of edible oils of the most important considerations of Egyptian national food security. Strategic stock is configured through domestic production or through imports or both. It turns review the amount of Egyptian strategic stock from edible oils during the period (2001-2015) that up to approximately 173 thousand tons, and this is sufficient for the consumption of about 42.4 days, or about 1.4 months, which necessitates the need to increase the size of the stock at about 1.48 million tons of edible oils to enough for domestic consumption for 12 months or about 740 thousand tons for 6 months conformable to Egyptian national food security considerations - (Table III).

**1- Surplus and deficit in the consumption of edible oils allocated for the Egyptian national during the study period (2001-2015):** Table (III) shows there is no surplus through the years of 2003, 2005, 2006, and 2007. It turns reviewing a surplus in the edible oils allocated for the Egyptian national consumption during the study period that ranges from a minimum of about 657.5 thousand tons in 2010 and a maximum of about 1531.4 thousand tons in 2015, with an annual average of around 1147.85 thousand tons enough for the consumption of about 364.5 days, or about 12.15 a month, and this surplus directed to the development of the strategic stock in some years, which shows where the deficit, which is withdrawn from the stock during the other years 2003, 2005, 2006, and 2007, and the deficit of edible oils allocated for the Egyptian national consumption of the during the period. The study estimated at about 855.99 thousand tons, or about 271.8 days, or about 9.06 a months, and this deficit will be covered during the years of deficit either by drawing from strategic reserves or import edible oils from the world marketing .

**2- Coefficient of food security for edible oils in Egypt during the study period (2001-2015):** The value of food security coefficient for edible oils in Egypt fluctuates between zero and one, and the closer the value of zero indicates that the decline in the rate of food security and the closer the value of one, the higher the achievement rate food security for edible oils, and calculated coefficient of food security as the ratio of strategic stock to the national consumption of edible oils, and as the strategic stock of edible oils is estimated at 172.5 thousand tons and the average national consumption of edible oils is estimated at 1147.85 thousand tons during the study period (2001-2015) with an annual average during that period , therefore, coefficient of edible oils food security estimated at about 0.21, therefore it requires to take various actions that would lead to increase the size of the edible oils strategic stock to enough half of it



needs for domestic consumption even come close to the value of coefficient of food security, from suitable position - (Table III).

**- Fifth: Policies and means to achieve edible oils food security in Egypt:**

During the past decades, many attempts to achieve an appropriate rate for agricultural development in Egypt, which included inventory and Reclamation then farming new land and decide what grants to them from field crops and horticulture, as well as follow the identification of ways to service the occasion, and the provision of strains of high-yield resistance to climatic conditions in various regions of Egypt. It was the establishment of irrigation systems of high efficiency reaches a total length of 40 thousand kilometers, stretching from Lake Nasser in front of the High Dam to the fields of the valley and delta of the total floor area of about 8.3 million feddans of the crop of about 15 million feddans (hectar = 0.54 feddan), and in spite of all these efforts, it has exacerbated the problem declined Egyptian food security in general as the inability of GDP to meet the needs of a growing population year after year, and was a major import foodstuffs including wheat, beans, olive oil, vegetable oils, maize, animal feed Levantine quantities exceeded 50% of total consumption. The following is a review can be the most important means to achieve food security policies of Egyptian edible oils as one of the most important problems of food security in Egypt is related to the daily consumption of each population. This can be achieved food security of the Egyptian edible oils through the following policies:

**1. Table (III) - Period of the adequacy of the surplus and the deficit of edible oils allocated for Egyptian daily domestic consumption during the period (2001-2015)**

Year	Surplus		Deficit		Strategic stock 10 <sup>3</sup> ton	Coefficient of food security
	Quantity (10 <sup>3</sup> ton)	Period adequacy surplus in daily domestic consumption	Quantity (10 <sup>3</sup> ton)	Period deficit in edible oils allocated for daily domestic consumption		
2001	29	13	-	-	29.0	0.04
2002	8.7	4.1	-	-	8.7	0.01
2003	-	-	6.2	7.8	- 6.2	- 0.01
2004	26.0	12.3	-	-	26.0	0.03
2005	-	-	90.5	2.9	- 90.5	- .08
2006	-	-	59.9	17	- 59.9	- 0.05
2007	-	-	18.8	4.9	- 18.8	- 0.01
2008	6.5	3	-	-	6.5	0.01
2009	14.5	3.7	-	-	14.5	0.01
2010	2.0	1.1	-	-	2.0	0.01
2011	70.4	17.4	-	-	70.4	0.05
2012	11.2	27.8	-	-	11.2	0.08
2013	73.2	17.7	-	-	73.2	0.05
2014	62.7	15.5	-	-	62.7	0.04
2015	43.9	10.6	-	-	43.9	0.03
<b>Total</b>	<b>348.1</b>	<b>126.2</b>	<b>175.4</b>	<b>32.6</b>	<b>172.5</b>	<b>0.21</b>

Surplus = (sum of two terms insufficient production and imports -365) \* daily consumption.

Deficit = (365 - sum of two terms insufficient production and imports) \* daily consumption.

**Source:** collected and calculated from table (I).

**1- Horizontal agricultural development policy:** It includes direction of the new areas for the cultivation of edible oils crops by reclaiming arable land with the provision of water resources additional necessary in order to achieve food security, specially in the land under the reform like the land-Salam Canal, which has an area of about 620 thousand feddans, of which 400 thousand feddans in the Sinai, a large part of them fit for cultivation immediately, as well as the territory of North Coast, which can exploit the rainy season in the winter, except for the month of April, as well as the land area of about 540 thousand feddans in Toshka, as well as another area in east Owaynat of about 250 thousand feddans, in addition to the approximately 400 feddans of arable in Aswan as well as about 500 feddans are planted in Egypt annually pulp any that can be

added about two million feddans of the patch can be allocated, including part of the cultivation of edible oils crops and thus could approach the great eye of the sufficiency from Egyptian needs from that strategy commodity with an annual average consumption of which approximately 1148 thousand tons during the period (2001 - 2015).

**2- Vertical agricultural development policy:** This is done by continuing to devise new varieties of early edible oils crops in maturity and resistance to diseases and other pests and resistant to stress environmental characterized by an increase of the yield per feddan compare with old varieties to be replaced, to be accompanied by the provision of production inputs at appropriate times, like most of the good seed of improved varieties developed specially for fertilizers, specially nitrogenous taking into account the direct agricultural extension of the farmers on how to use it with suitable prices for these inputs.

It should be noted that it could be reconsidered in the compositions current cropping to increase the acreage under edible oils crops without affecting other crops through the development of early maturing varieties able to punish the cultivation of another crop after edible oils crops, as well as the establishment of agricultural extension in turn encourage and educate farmers attention to agriculture, including achieve higher production and motivate them using the methods of modern technology of irrigation systems and methods of service and care for the crops to maintain high productivity. The role of agricultural extension in vertical agricultural development by educating farmers on the use of modern technological methods as well as the use of deep plowing instead of plowing the traditional because it helps to distribute the water in a way to help increase the percentage of germination and the style of the traditional irrigation became big in the amount of water because some of the edible oils crop need a large amount of water in the cultivation and therefore must be the direction of sprinkler irrigation and thus increases the amount of output diabetes.

**3- Policy of rationalizing the consumption of edible oils:** The Egyptian policy of rationalizing the consumption of edible oils and organization, provided that appropriate of the most important policies that are consistent with international standards of health, which may result in a decrease in the size of the Egyptian consumer of edible oils gap because the per capita consumption of the most important factors influencing the edible oils gap, and requires directing a great deal of awareness and guidance of government directed the Egyptian people to raise the level of per capita consumption in order to reduce the average consumption of edible oils and work to address the ignorance of food found in Egyptian society to improve per capita consumption of edible oils.

**4- Policy of consumer subsidy of edible oils:** The consumer subsidy of edible oils considers from the most important factors that have a positive impact in the increase in the average per capita consumption of edible oils may be due to an increase in the amount of the total demand for subsidized commodities to lower their price and cheap source of energy, something that would increase the consumption of edible oils about (55 thousand tons) which greater than the local production of it (22.1 thousand tons) and thus increase the amount of Edible oils imports to cover the edible oils gap, which adversely affects the Egyptian balance of trade and then balance of payments which led to follow the Egyptian government's policy of deficit financing and increase the amount of the total payment methods which not commensurate with the total increase in the gross national product which resulted in increased inflation problem as a result of an increase in aggregate demand at a rate faster than the increase in total supply.

**5- Policy of diversification of edible oils imports sources:** It includes all the arrangements followed by the state which needed to control and regulate imported annually to achieve the provision of edible oils commodity and achieve the national food security, which have an impact on the overall development and increased investment in the fields of agricultural, industrial and tourism which lead in turn, to increase the national income and the strengthening of the national economy and achieve of raise the standard living for all Egyptian people. The statistics data show that Egypt was self-sufficient of edible oils during the study period, as a result of environmental conditions unsuitable happened deficit in domestic production of edible oils has been unable to meet the particular needs of consumer and then resort to edible oils imports to solve this deficit which Athrip upon the existence of a deficit in Egyptian agricultural trade balance and then a deficit in the Egyptian balance of payments where bears Egypt most of the value paid in the import process in foreign currency (American dollar and Euro), in addition to targeted subsidies annually for cotton seed oil to the category of low-income people, which represents a large proportion of members of the Egyptian people through ration cards, and getting this problem difficult in light of the trend increasing world edible oils prices due to the entry of edible oils in the production of biofuels from edible oils crops, which negatively affects staffed offered edible oils that go into the food industry, which leads to the increase in the price of edible oils imports and the consequent of a deficit in the Egyptian balance of payments.

It should be noted that it is expected that a significant increase in the quantity of edible oils imports in the coming years - if it is not the expansion of edible oils production in Egypt - and because the system import of edible oils in Egypt is subject to the phenomenon of geographical focus as Egypt depends on imports of edible oils from limited countries and those countries controlled most of the international market for edible oils and thus on prices and routes to export, in addition to the implementation of the convention and the establishment of the World Trade Organization is expected to result in a future increase in the prices of most food commodities, including edible oils, which requires the development of a national strategy to increase the self-sufficiency ratio of edible oils with the need to distribute the amounts of import and diversification among various sources in order to avoid what might happen from political pressure not to be in favor of the Egyptian economy in the event of changed circumstances the international political; this is because the dependence on these markets in the provision of edible oils consumer needs makes it susceptible to numerous global risks that occur in the world food markets or those related to potential climate change at the world level or local. It also requires the need to study the obligations of reduction of subsidies granted to the production and export in the countries exporting Edible oils in order to reduce the negative effects on Egyptian economy, and studying the application of the free policy to import edible oils through studying the prices of exported in different countries, which might be characterized as heterogeneous as a result of differing results of reduction of subsidies in each of them, and to increase edible oils production through the expansion of edible oils crops and raise the productivity of edible oils crops circulating through the varieties of high productivity and to suit every center of administrative centers in Egypt, and rationalizing the consumption of edible oils through dismiss size wastage of Edible oils, and to achieve food security has to be awareness programs need to prepare for the application of planning policy breeds where it is one of the most important determinants of the demand for Egyptian edible oils imports.

## References

- Adel Ahmed Hashish, The problem of commodity subsidy and food security in Egypt - Egyptian universities House, Alexandria (no date) .
- Amal Mohammed Hassan Abu Zaida (2014), The possibilities for achieving food security of the Egyptian major cereal crops, Master thesis, Department of Agricultural Economics, Faculty of Agriculture (Saba Basha), Alexandria University .
- Barry R., and Ralph M.(1989), Quantitative Analysis for Management, 3<sup>rd</sup> Edition, Allyn Bacon Inc. USA.
- Daniel W., and Terrel J. (1989), Business Statistics for Management and Economics, Houghton Mifflin Company, USA
- Food and Agriculture Organization (F.A.O.) (1996)"Food Security Assessment", January.
- Gaber Bassyouni, Food gap and food security of sugar in Egypt, 9<sup>th</sup> International European Forum (*Igls-Forum*) on System Dynamics and Innovation in Food Networks, February 09-13, 2015, Igls, Innsbruck, Austria.
- Gaber Bassiouni & Aoun Khairallah (1998)- An economic study of food aid and agriculture in developing countries and future prospects - Mansoura Journal of Agricultural Sciences – Vol. (23) - Issue (10) - October .
- Gaber Bassyouni (1994), An analytical study for the Egyptian trade in the most important agricultural commodities with emphasis on exports to the European Community, Ph. Thesis, College of Agriculture (Saba Basha), Alexandria University  
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