

An Analytical Study of The Production and Consumption of Some Oil Crops in The Arab Republic of Egypt

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ABSTRACT

Egypt suffers from a large food gap in vegetable oils due to the increased demand for them as a result of the continuous increase in population on the one hand, and the decrease in local production Cultivated with oil crops, where it reached by about 28.22 thousand tons during the study period on the other hand, as well as the decrease in the area of agricultural land, It reached about 28.25 thousand acres on average during the period (2001-2020), and the research aims to study the current situation of production and consumption of vegetable oils by identifying the development of the amount of local production of vegetable oils, the amount of pure food, and the size of the oil gap from soybean oils and sunflower oils. The most important results were found to be a decrease in the amount of local oil production by 30.7 thousand tons at an annual rate of 6% of the average total amount of local production of oils by 670 thousand tons. The cultivation of soybeans was also concentrated in the Minya Governorate by 74.6% of the total cultivated area in Egypt. Then Beni Suf Governorate came in second place in terms of soybean crop cultivation with a rate of 10.4%, then Assiut Governorate came in third place with 5% of the total area of the governorates planted with soybeans, and sunflower crop cultivation was concentrated in Nubaria Governorate with a rate of 26.5% of the total cultivated area. In Egypt, then Beheira Governorate comes in second place in terms of sunflower cultivation with a rate of 24.3%, then Fayoum Governorate comes in third place with a rate of 17.2% of the total area of the governorates cultivated with sunflower crops. The amount of pure food made from vegetable oils also increased by 56.49 thousand tons, at a rate of 5.4% of the average total amount of pure food, estimated at about 1114.7 thousand tons. The import of sunflower oil to Egypt from Russia ranked first and represented about 40% of the import values of sunflower oil out of the total. Countries from which Egypt imports Ukraine comes in second place and represents about 36% of the amount of sunflower oil imported, then comes the country of Argentina and represents about 20.51% of the amount of sunflower oil imported, and imports of soybean oil from the country of Argentina are also concentrated and are It ranks first in terms of importing soybean oil with a rate of 79%, then Brazil comes in second place and represents about 18.8% of the amount of imported soybean oil out of the total number of countries in the world, then the United States comes in third place and

represents about 8.18% of the amount of imported soybean oil. Of the total countries in the world

Key Words: Vegetable Oils, Soybean Oil, Sunflower Oil, Food Gap.

INTRODUCTION

Oil crops are considered one of the most important crops that have shown great interest from the political leadership during the recent period, which has also shown great interest from the consumer group with the minimum income, which is interested in support from the Ministry of Supply. The General Authority for Supply Commodities is the only government body responsible for crude oils. Edible oils, which are distributed through the supply offices of the Ministry of Supply. Egypt produces a group of oil crops, most notably soybean, sesame, and sunflower oil. However, the vegetable oils produced differ from what the local market prefers and consumes, as it comes at the forefront of the most prominent oils consumed locally (Aly, 2008 and Kamal, 2010). Soybean oil by 18.2%, frozen oils by 69.3%, sunflower oil by 2.5%, and the development of the amount of pure food soybean oil representing about 24% of the total vegetable oils (Abdel-Wahab, 1984 and Abdel Hamid,1986), and sunflower oil representing about 20% of the pure food of the total oils. Vegetable oils: Frozen oils represent about 40% of the pure food of the total vegetable oils. Therefore, some crops (soybeans and sunflowers) are being studied during the period (2001-2020) (Ministry of Agriculture and Land Reclamation, 2001-2021).

Research Problem:

Egypt is considered one of the developing countries that suffer from the food problem, most notably the shortage of vegetable oils. Its per capita rate is below the global level, which was caused by a deficiency in the production of vegetable oils in Egypt of various types (Albatran *et al.*, 2019). This is due to the existence of a food gap between local production and consumption as a result of To increase the population, including the area and production of these crops at the national level and at the level of the governorates producing these crops, by studying the geographical distribution of the cultivation of these crops in Egypt

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(Ibrahim, 2007 and Khalil *et al.*, 2016), as well as the national consumption of vegetable oils in Egypt and that terrible food gap between local consumption and production, which also affects security (Saleh, 2000 and Mashaal *et al.*, 2017). Food in Egypt in light of the Russian-Ukrainian war, it is necessary to study the current situation of the Egyptian market for vegetable oils to know the security and strategic situation of these commodities in Egypt, stressing that the aim of this study is to shed light on the various economic aspects surrounding this topic, and to present an integrated picture of the issue under study. In front of the decision maker and society.

Research Aims:

The research aims to study the current situation of vegetable oils by identifying the development of the amount of local production, local consumption and imports of vegetable oils, the amount of pure food vegetable oils, and the size of the oil gap from soybean oils and sunflower oils. And a study of the geographical distribution of the main governorates for the area and production of soybean and sunflower crops, and attention to the governorates that rank first in the cultivation of the two study crops in Egypt, and a study of the development of the value and quantity of imports and exports of soybean and sunflower oil and the geographical distribution of the countries from which the oils are imported, the most important of which are soybean oil and sunflower oil. Proposing means and recommendations to increase the cultivated area of oil crops to fill or reduce the food oil gap in Egypt.

Research method and data sources:

The research used the descriptive method with the aim of identifying the nature and form of the various phenomena and variables in the study, while quantitative analysis was used to explain and estimate the relationships between the variables of the statistical models used that are relevant to the objectives of the study. The study relied on published and unpublished secondary data collected from the publications of the Central Agency for Mobilization General statistics and bulletins of the Ministry of Agriculture and Land Reclamation.

RESULTS AND DISCUSSION

First: The development of the area and production of oil crops in the Arab Republic of Egypt

Study of the relative importance of area and production of the most important oil crops (soybeans, cotton, sunflower, sesame, peanuts) at the crop and governorate levels. The data shown in Table (1) during the period (2001-2020) indicate that the area of oil crops fluctuated during the study period, as its minimum reached about 402 thousand acres in 2016, which is

equivalent to about 40% of the year 2001, and its maximum amounted to About 1,009 thousand acres in 2001, which is equivalent to about 100% of the same year, with an average of 685 thousand acres during the study period, which is equivalent to about 68% of 2001.

It is also clear from the same table that the amount of oil crop production during the same period (2001-2020) reached a minimum of about 455 thousand tons in 2016, which is equivalent to about 41% of the year 2001, while its highest amount reached about 1,100 thousand tons in The year 2004, which is equivalent to about 100% of the year 2001, with an average capacity of 746 thousand tons during the study period, which is equivalent to about 65% of the year 2001.

Estimating the general trend parameters of the total production and total area of the most important oil crops in the Arab Republic of Egypt:

The general trend equations for the development of both the total cultivated area and the total production of the total oil crops during the period shown in Table (2) indicate that there is a decrease in the cultivated area of oil crops, as this annual decrease in area was estimated at about 28.25 thousand acres. The value of the coefficient of determination, which is About 0.76, meaning that only 76% of the changes occurring in area are due to the time factor. Equation No. (2) in the previously mentioned table also indicates that the amount of oil crop production has tended to decrease. Production reached about 28.22 thousand tons during the previously mentioned period due to the decrease in the cultivated area year after year. It also shows the value of the coefficient of determination, which is about 0.61, meaning that Only 61% of the changes occurring in the dependent variable are due to the time factor. The reasons for the decrease in production since 2008, when the amount of production in this year reached about 613 thousand tons annually, is due to the lack of interest in oil crops compared to the cultivation of other crops with higher profits until the year 2020, when production reached about 563 thousand tons.

Sunflower crop area index:

It is clear from Table (3) that the sunflower crop comes in fourth place in terms of total area (soybeans, cotton, sunflowers, sesame, peanuts), as it ranged between a minimum of about 15 thousand acres in 2013, which is This is equivalent to about 32.6% of its counterpart in the base year of 2001, and a maximum of about 46 thousand acres in 2001. Its relative importance was estimated at about 100% of the base year, and the average area was about 26 thousand acres, which is equivalent to about 52% of the area of oil crops in 2001

Soybean crop area index:

It is clear from Table (3) that the soybean crop comes in fifth place out of the total area of (soybeans, cotton, sunflowers, sesame, peanuts), as it ranged between a minimum of about 13 thousand acres in 2001, which is equivalent to About 100%, which is the same as the base year, and a maximum of about 38 thousand acres in 2018. Its relative importance was estimated at about 292% of the base year 2001, and the average area was about 25 thousand acres, which is equivalent to about 179% of the area in 2001.

Sunflower crop production index:

It is clear from Table (3) that the sunflower crop comes in fifth place in terms of total production of (soybeans, cotton, sunflowers, sesame, peanuts), as it ranged between a minimum of about 16.3 thousand tons in 2019, which is This is equivalent to about 37% of its

counterpart in the base year of 2001, and a maximum of about 44 thousand tons in 2004. Its relative importance was estimated at about 101% of the base year, and the average production reached about 27.6 thousand tons, which is equivalent to about 59% of oil crop production in 2001.

Soybean crop production index:

It is clear from Table (3) that the soybean crop comes in fourth place in terms of total production of (soybeans, cotton, sunflowers, sesame, peanuts), as it ranged between a minimum of about 15 thousand tons in 2001, which is This is equivalent to about 100% of the base year, and a maximum of about 47.2 thousand tons in 2018. Its relative importance was estimated at about 315% of the base year of 2001, and the average production reached about 33 thousand tons, which is equivalent to about 207% of the production in 2001 .

Table 1. The relative importance of the total cultivated area and total production of the most important oil crops in Egypt during the period (2001-2020)

Years	Area (thousand acres)	%	Production (thousand tons)	%
2001	1009	100	1099	100
2002	969	96	1050	96
2003	806	80	889	81
2004	998	99	1100	100
2005	923	91	941	86
2006	794	79	886	81
2007	851	84	930	85
2008	565	56	613	56
2009	591	59	595	54
2010	687	68	706	64
2011	794	79	933	85
2012	575	57	576	52
2013	532	53	543	49
2014	612	61	590	54
2015	518	51	471	43
2016	402	40	455	41
2017	482	48	562	51
2018	596	59	734	67
2019	505	50	674	61
2020	492	49	563	51
Average	685	68	746	65
Minimum	402	40	455	41
Maximum	1009	100	1100	100

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Statistics Bulletin, consecutive issues.

Table 2. General trends in the development of both the total cultivated area and the total production of the most important oil crops during the period (2001-2020)

No.	Dependent variable	Estimated equation	R ²	F
1	Total cultivated area (thousand acres)	$Y_1 = 981.6 - 28.25 X_t$ (21.9) (-7.5)	.76	57.4**
2	Total production (thousand tons)	$Y_2 = 1041 - 28.22 X_t$ (8.2) (4.6)	0.61	28.9**

Where: =Y1 The estimated area of the total cultivated area in thousand acres.

Y2 = Estimated production of total production in thousand tons.

X = time variable.

t = (1,2,3 20).

Source: Collected and calculated from the data presented in Table (1).

Table 3. Index of area and production development for the most important oil crops in Egypt during the study period (2000 - 2020)

(Production: thousand tons), (Area: thousand acres)

Years	sunflower area	%	Sunflower production	%	Soybean area	%	Soybean production	%	Total area of oil crops	Total production of oil crops
2001	100	46.0	44	100	13	100	15	100	1009	1099
2002	106	36.0	35	80	14	108	18	120	969	1050
2003	106	32.0	31	70	20	154	29	193	806	889
2004	103	45.0	44	101	34	262	43	287	998	1100
2005	99	31.0	35	80	20	154	26	173	923	941
2006	107	35.0	38	86	18	138	23	153	794	886
2007	110	27.0	29	66	19	146	26	173	851	930
2008	97	19.0	20	46	21	162	29	193	565	613
2009	146	39.0	40	90	17	131	26	173	591	595
2010	129	35.0	37	84	36	277	43	287	687	706
2011	115	17.5	18	42	23	177	30	200	794	933
2012	85	17.7	20	45	17	131	26	173	575	576
2013	88	15.0	19	43	22	169	33	220	532	543
2014	94	16.7	22	50	28	215	40	267	612	590
2015	124	15.7	19	43	34	262	47	313	518	471
2016	103	15.2	19	43	32	246	45	300	402	455
2017	91	16.2	20	45	31	238	36	240	482	562
2018	97	15.7	19	43	38	292	47.2	315	596	734
2019	115	15.8	16	37	29	223	36	240	505	674
2020	153	17.8	20	45	30	230	36	240	492	563
Average	105	26	28	59	25	179	33	207	685	746
Minimum	85	15	16	37	13	100	15	100	402	455
Maximum	146	46	44	101	38	292	47.2	315	1009	1100
%		3.8	4		4		4.4			

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Statistics Bulletin, consecutive issues.

Estimating the general trend of the area and production of the most important oil crops in the Arab Republic of Egypt:

By studying the general temporal trend equation for the development of the soybean crop area during the period (2001-2020), the data from the first equation in Table (4) indicate that the soybean crop area increased by a statistically significant amount of about 856 acres annually, and the model as a whole was proven statistically significant, and indicates The coefficient of determination is about 0.42, meaning that about 42% of the changes occurring in the soybean crop area are due to the influence of factors explained by time.

By studying the general temporal trend equation for the development of the sunflower crop area during the period (2001-2020), it is clear from the second equation in Table (4) that the sunflower crop area decreases by a statistically significant amount of about 1518 acres annually. The model as a whole has also been proven statistically significant, and the coefficient indicates The determination of about 0.684 indicates that about 68.4% of the changes occurring in the sunflower crop area are due to the influence of factors explained by time.

By studying the general time trend equation for the development of soybean crop production during the period (2001-2020), the data from the third equation in Table (4) indicate that soybean crop production increased by a statistically significant amount of about 1006 tons annually, and the model as a whole was proven statistically significant, and indicates The coefficient of determination is about 0.44, meaning that about 44% of the changes occurring in soybean crop production are due to the influence of factors explained by time.

By studying the general time trend equation for the development of sunflower crop production during the period (2001-2020), it is clear from the fourth equation in

Table 4. General time trend equations for the development of the area and production of the most important oil crops in Egypt during the period (2001 – 2020)

No.	Dependent variable	Estimated equation	R ²	F
1	Soybean crop area	$\hat{Y}_i = 15.81 + 0.856 X_i$ (5.62)** (3.65)**	0.42	13.37**
2	Sunflower crop area	$\hat{Y}_i = 41.35 - 1.518 X_i$ (14.19)** (-6.2)**	0.68	38.98**
3	Soybean crop production	$\hat{Y}_i = 21.52 + 1.06 X_i$ (6.38)** (3.78)**	0.44	14.34**
4	Sunflower production	$\hat{Y}_i = 41.07 - 1.317 X_i$ (15.08)** (-5.80)**	0.64	32.3**

whereas:

t = indicates the value of the t-test, R² = indicates the coefficient of determination of the study variables.

F = indicates the (F) test of the significance of the statistical model as a whole.

*indicates the significance of the coefficient at a significance level of 0.05, ** indicates statistical significance at a significance level of 0.01.

Source: Calculated from data in Table (3).

Table (4) that sunflower crop production decreases by a statistically significant amount of about 1322 tons, and the model as a whole has been proven statistically significant, and the coefficient of determination indicates The value of about 0.652 indicates that about 65.2% of the changes occurring in sunflower crop production are due to the influence of factors explained by time.

Second: Geographical distribution of the sunflower crop area:

Table (5) shows the geographical distribution and relative importance of the area of land cultivated with sunflower crops in the governorates of the Arab Republic of Egypt during the period (2010-2019). The table indicates that the governorate of the Nubaria region is about 4853.4 acres, which represents about 26.5% of the total cultivated area. In the Arab Republic of Egypt, followed by Beheira Governorate with an average area estimated at about 4443.8 acres, representing about 24.3% of the total cultivated area, followed by Fayoum Governorate in third place with an average area estimated at about 3144.8 acres, representing about 17.2% of the total cultivated area. Minya Governorate ranked fourth, with an average area estimated at about 1946.1 acres, representing about 10.6%. Assiut Governorate comes in fifth place with an average area of 1,342 acres, representing about 7.3%. The rest of the governorates of the Republic come after that, with very similar percentages.

Second: Geographical distribution of soybean crop area:

Table (6) shows the geographical distribution and relative importance of the area of land cultivated with soybean crops in the governorates of the Arab Republic of Egypt during the period (2010-2019). The table indicates that the Minya region governorate is about 21,723.3 acres, which represents about 74.6% of the total cultivated area.

Table (5): Geographical distribution of sunflower area in Egypt's governorates and its relative importance during the period (2010 - 2019) (Area: acres)

%	Average	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	Governorate
2.3	425.4	561	620	680	259	274	177	252	517	387	527	Alexandria
18.4	4443.8	3372	3952	3005	5061	3220	5205	4036	3721	4807	8059	Al-Buhaira
0	9.1	0	12	0	0	0	4	2	0	9	64	Gharbia
0	8	0	0	21	0	9	0	0	0	20	30	Kafr El-Sheikh
0.3	7	50	0	0	0	0	5	5	10	0	0	Ismailia
0	33.5	0	52	0	20	6	0	0	0	0	257	Dakahlia
0	4.3	0	0	0	0	0	0	0	0	0	43	Damietta
4	244.4	741	377	599	282	148	64	37	45	15	136	Al-Sharqiya
0	9.6	0	0	0	0	15	16	6	8	39	12	Qalyubia
0	17.7	0	0	0	0	0	0	0	0	0	177	06-Oct
1.5	601.6	280	280	255	329	1866	651	840	640	875	0	Giza
3.8	608.7	694	255	567	658	401	519	69	290	584	2050	Beni Suf
18.9	3144.8	3460	3115	2404	1868	1499	998	1420	2940	4456	9288	Fayoum
6.5	1946.1	1194	1278	1251	674	1707	1455	1903	2067	1986	5946	Minya
0.2	1342	45	244	436	254	313	639	732	3012	2406	5339	Assiut
0	93.9	1	12	145	17	12	98	146	75	55	378	Sohag
0	0.6	0	0	2	3	0	0	0	0	0	1	Qena
0.9	206.5	156	511	107	19	51	12	38	39	15	1117	the new Valley
0	56.3	0	0	3	3	2	0	75	140	180	160	Matrouh Governorate
28.5	4853.4	5213	5000	6700	5800	6150	6480	5600	4210	1701	1680	Nubaria
100	18311	18310	15708	16172	15247	15678	16318	15161	17714	17535	35264	Total

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Statistics Bulletin, consecutive issues.

Table (6): Geographical distribution of soybean area in Egypt's governorates and its relative importance during the period (2010 - 2019) (Area: acres)

%	Average	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	Governorate
0.5	145.7	6	170	388	329	368	41	2	5	11	137	Al-Buhaira
0.5	154.3	7	666	0	180	286	86	7	10	30	271	Gharbia
0.6	188.2	9	169	172	352	1031	1	25	0	27	96	Kafr El-Sheikh
4.7	1379.5	1052	6749	306	557	429	11	161	156	517	3857	Dakahlia
0.0	11.5	0	25	0	0	0	2	0	0	0	88	Damietta
1.2	350.5	210	1136	364	169	133	51	8	6	30	1398	Al-Sharqiya
0.0	6.1	5	23	21	7	2	3	0	0	0	0	Ismailia
0.1	23	3	13	23	31	34	15	19	22	31	39	Menoufia
0.4	114.2	20	254	173	130	132	92	48	32	108	153	Qalyubia
10.4	3037.8	3579	2976	3496	3819	3814	3158	2238	1534	2234	3530	Beni Suf
0.1	33.8	0	6	163	0	0	15	4	6	36	108	Fayoum
74.6	21723	22084	23971	23188	24257	24952	23509	18424	13866	18129	24853	Minya
5.0	1455.4	1958	1542	1357	1825	1547	1198	1048	1341	1306	1432	Assiut
0.5	138.5	258	179	155	167	156	143	224	23	40	40	Sohag
0.9	256.8	295	160	260	100	950	160	195	105	120	223	Nubaria
0.2	68.2	10	151	459	0	62	0	0	0	0	0	the new Valley
0.0	14.2	12	0	30	0	0	0	0	0	100	0	Luxor
100.0	29103	29508	38190	30557	31923	33896	28485	22423	17106	22719	36225	Total

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Statistics Bulletin, consecutive issues.

Third: The development of production, consumption, and average per capita share of vegetable oils (soybean, sunflower) during the study period (2001-2020).

A - The relative importance of the amount of local oil production (soybean and sunflower) in Egypt

(1) The relative importance of the amount of local production of soybean oil in Egypt

It is clear from Table (7) that soybean oil comes in second place in terms of production of vegetable oils. Its average relative importance reached 18.2% of the average total vegetable oils under study, as it ranged between a minimum of about 24 thousand tons in 2001 during the period 2001-2020), which is equivalent to about 10.9% of the total oil production under study, and a maximum of about 409 thousand tons in 2020, its relative importance was estimated at about 43.1%, and the average production of domestic oil in Egypt reached about 122.3 thousand tons, which is equivalent to About 18.9% of oil production during the study period.

(2) The relative importance of the amount of local production of sunflower oil in Egypt

It is clear from Table (7) that sunflower oil comes in fourth place in terms of production of vegetable oils. Its average relative importance reached 2.5% of the average total vegetable oils under study, as it ranged between a minimum of about 8 thousand tons in 2009 during the period 2001-2020), which is equivalent to about 2.1% of the total oil production under study, and a maximum of about 30 thousand tons in 2011, its relative importance was estimated at about 4.8%. The average production of domestic oil in Egypt was about 17.1 thousand tons, which is equivalent to about 3.1% of oil production during the study period.

Study of the general time trend in the development of the quantity of production of edible vegetable oils from their various sources during the period (2000-2020):

By studying the general time trend equation for the development of soybean oil production during the period (2001-2020), the data from the first equation in Table (8) indicate that there is a statistically significant direct relationship at a significance level (0.01) between the amount of local production of soybean oil and the time variable.

Table 7. The relative importance of the development of the quantity of production of vegetable oils from their various sources in Egypt during the period (2001-2020). (Quantity: thousand tons)

Years	Soybean oil		sunflower oil		Total vegetable oils	
	quantity	%	quantity	%	quantity	%
2001	24	10.9	12	5.5	220	100
2002	56	19.2	24	8.2	292	100
2003	25	9.5	13	4.9	264	100
2004	41	6.1	12	1.8	674	100
2005	104	12.1	14	1.6	857	100
2006	102	9.9	9	0.9	1032	100
2007	167	35.2	12	2.5	474	100
2008	91	22.4	11	2.7	407	100
2009	116	29	8	2	400	100
2010	109	28.7	21	5.5	380	100
2011	119	19.1	30	4.8	623	100
2012	84	10.7	32	4.1	784	100
2013	150	16.3	19	2.1	919	100
2014	144	16.8	14	1.6	855	100
2015	105	24	16	3.7	438	100
2016	132	13.1	11	1.1	1007	100
2017	114	10.3	20	1.8	1106	100
2018	178	17.2	25	2.4	1033	100
2019	176	25.2	29	4.1	699	100
2020	409	43.1	10	1.1	949	100
Average	122.3	18.9	17.1	3.1	670.7	100
Minimum	24	10.9	8	2.1	220	
Maximum	409	43.1	30	4.8	1106	
%	18.2		2.5		100	

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Food Balance Bulletin, consecutive issues.

Table 8. General time trend equations for the development of the production quantity of edible vegetable oils from their various sources in Egypt during the period (2000-2020)

No.	Dependent variable	Estimated equation	R ²	F
1	Soybean oil (thousand tons)	$\hat{Y}_i = 19.37 + 9.76 X_i$ (0.726) (4.28)*	0.505	18.37**
2	Sunflower oil (thousand tons)	$\hat{Y}_i = 13.18 + 0.373 X_i$ (3.88) (1.315)	0.088	1.29

whereas:

t = indicates the value of the t-test, R² = indicates the coefficient of determination of the study variables.

F = indicates the (F) test of the significance of the statistical model as a whole.

*indicates the significance of the coefficient at a significance level of 0.05, ** indicates statistical significance at a significance level of 0.01.

Source: Calculated from data in Table (7).

The amount of local production of soybean oil is increasing by a statistical amount of about 122.3 thousand tons annually, with an annual increase rate estimated at about 18.9%. The model as a whole has also been proven statistically significant, and the coefficient of determination of about 0.50 indicates that about 50% of the changes occurring in the production of soybean oil Soy is due to the influence of factors explained by time.

By studying the general time trend equation for the development of sunflower oil production during the period (2001-2020), it is clear from the second equation in Table (8) that there is no significant general trend, and that time does not affect the production of soybean oil. This confirms that the coefficient of determination did not increase. About 0.08, and this indicates the relative stability of soybean oil production during the study period.

B - The relative importance of the development of the amount of pure food derived from vegetable oils from their various sources during the period (2001-2020)

(1) The relative importance of the amount of pure food soybean oil in Egypt

It is clear from Table (9) that soybean oil comes in second place in terms of the amount of pure food from vegetable oils. Its average relative importance reached 24% of the average total amount of pure food from vegetable oils under study, as it ranged between a minimum of about 70 One thousand tons in 2012 during the period (2001-2020), which is equivalent to about 5.8% of the average amount of pure food, and a maximum amounting to about 602 thousand tons in 2020. Its relative importance was estimated at about 33.6%, and the average amount of pure food from vegetable oils in Egypt about 268.7 thousand tons,

which is equivalent to about 26.7% of the amount of pure food from vegetable oils during the study period.

(2) The relative importance of the amount of pure food sunflower oil in Egypt

It is clear from Table (9) that sunflower oil comes in third place in terms of the amount of pure food from vegetable oils. Its average relative importance reached 20% of the average total amount of pure food from vegetable oils under study, as it ranged between a minimum of about 26 One thousand tons in 2003 during the period (2001-2020), which is equivalent to about 6.6% of the average amount of pure food, and a maximum amounting to about 495 thousand tons in 2018. Its relative importance was estimated at about 26%. The average amount of pure food from vegetable oils in Egypt was about 218.4 thousand tons, which is equivalent to about 18.1% of the net food quantity of vegetable oils during the study period.

Studying the general temporal trend in the development of the amount of pure dietary vegetable oils from their various sources during the period (2001-2020):

By studying the general temporal trend equation for the development of the amount of pure food soybean oil during the period (2001-2020), the data from the first equation in Table (10) indicate that there is a statistically significant direct relationship at the level of significance (0.01) between the amount of pure food soybean oil and the time variable. The amount of pure food soybean oil is increasing by a statistical amount of about 13.39 tons annually. The model as a whole has also proven statistically significant, and the coefficient of determination of about 0.30 indicates that about 30% of the changes occurring in the amount of pure food soybean oil are due to the influence of factors that Time explains it.

Table 9. The relative importance of the development of the amount of pure food vegetable oils from their various sources during the period (2001-2020)

Years	(Quantity: thousand tons)					
	Soybean oil		Sunflower oil		Total vegetable oils*	
	quantity	%	quantity	%	quantity	%
2001	204	35.5	68	11.8	575	100
2002	212	42.7	44	8.9	496	100
2003	129	33	26	6.6	391	100
2004	131	13	124	12.3	1007	100
2005	188	15.1	129	10.3	1248	100
2006	142	10.2	128	9.2	1389	100
2007	260	33.1	158	20.1	786	100
2008	297	40.4	112	15.2	736	100
2009	247	34.6	130	18.2	714	100
2010	246	36.7	147	21.9	671	100
2011	443	34.9	237	18.7	1270	100
2012	70	5.8	472	39.1	1207	100
2013	298	19.5	518	33.9	1530	100
2014	163	12.3	445	33.6	1324	100
2015	298	43.8	58	8.5	681	100
2016	631	38.1	152	9.2	1654	100
2017	240	14.3	475	28.4	1675	100
2018	307	16.1	495	26	1902	100
2019	265	21.3	215	17.3	1244	100
2020	602	33.6	235	13.1	1794	100
Average	268.7	26.7	218.4	18.1	1114.7	100
Minimum	70	5.8	26	6.6	391	
Maximum	602	33.6	495	26	1794	
%	24		20		100	

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Food Balance Bulletin, consecutive issues.

Total vegetable oils(*)

By studying the general temporal trend equation for the development of the amount of pure food sunflower oil during the period (2001-2020), it is clear from the second equation in Table (10) that there is a statistically significant inverse relationship at a level of significance (0.01) between the amount of pure food sunflower oil and the time variable. Since the quantity of pure food sunflower oil is increasing by a statistically significant amount of about 16.88 thousand tons annually, the model as a whole has been proven statistically significant, and the coefficient of determination of about 0.363 indicates that about 36.3% of the changes occurring in the quantity of pure food sunflower oil are due to the effect Factors explained by time.

C - The relative importance of the evolution of the size of the nutritional gap from vegetable oils from their various sources during the period (2001 – 2020)

(1) The relative importance of the evolution of the nutritional gap size of soybean oil in Egypt:

It is clear from Table (11) that soybean oil comes in second place in terms of the amount of pure food from vegetable oils. Its average relative importance reached 24% of the average total amount of pure food from vegetable oils under study, as it ranged between a minimum of about 70 One thousand tons in 2012 during the period (2001-2020), which is equivalent to about 5.8% of the average amount of pure food, and a maximum of about 602 thousand tons in 2020, its relative importance was estimated at about 33.6%, and the average amount of pure food from vegetable oils in Egypt reached about 268.7 thousand tons, which is equivalent to about 26.7% of the net food quantity of vegetable oils during the study period.

Table 10. General temporal trend equations for the development of the amount of net food from dietary vegetable oils from their various sources during the period (2000-2020)

No.	Dependent variable	Estimated equation	R ²	F
1	Soybean oil (thousand tons)	$\hat{Y}_i = 127.97 + 13.39 X_i$ (2.21)* (2.77)*	0.300	7.71*
2	Sunflower oil (thousand tons)	$\hat{Y}_i = 41.11 + 16.883 X_i$ (0.652) (3.23)*	0.363	10.27*

whereas:

t = indicates the value of the t-test, R² = indicates the coefficient of determination of the study variables.

F = indicates the (F) test of the significance of the statistical model as a whole.

*indicates the significance of the coefficient at a significance level of 0.05, ** indicates statistical significance at a significance level of 0.01.

Source: Calculated from data in Table (9).

(2) The relative importance of the evolution of the nutritional gap size of sunflower oil in Egypt:

It is clear from Table (11) that sunflower oil comes in third place in terms of the amount of pure food from vegetable oils. Its average relative importance reached 20% of the average total amount of pure food from vegetable oils under study, as it ranged between a minimum of about 26 One thousand tons in 2003 during

the period (2001-2020), which is equivalent to about 6.6% of the average amount of pure food, and a maximum amounting to about 495 thousand tons in 2018. Its relative importance was estimated at about 26%, and the average amount of pure food from vegetable oils in Egypt was About 218.4 thousand tons, which is equivalent to about 18.1% of the amount of pure food from vegetable oils during the study period.

Table 11. The relative importance of the development of the size of the nutritional gap from vegetable oils in Egypt, with a focus on soybean oil and sunflower oil during the period (2001-2020)

Years	Soybean oil		Sunflower oil		Total vegetable oils	
	quantity	%	quantity	%	quantity	%
2001	-180	50.7	-56	15.8	-355	100
2002	-156	76.5	-20	9.8	-204	100
2003	-104	81.9	-13	10.2	-127	100
2004	-90	27.0	-112	33.6	-333	100
2005	-84	21.5	-115	29.4	-391	100
2006	-40	11.2	-119	33.3	-357	100
2007	-93	29.8	-146	46.8	-312	100
2008	-206	62.6	-101	30.7	-329	100
2009	-131	41.7	-122	38.9	-314	100
2010	-137	47.1	-126	43.3	-291	100
2011	-324	50.1	-207	32.0	-647	100
2012	14	-3.3	-440	104.0	-423	100
2013	-148	24.2	-499	81.7	-611	100
2014	-19	4.1	-431	91.9	-469	100
2015	-193	79.4	-42	17.3	-243	100
2016	-499	77.1	-141	21.8	-647	100
2017	-126	22.1	-455	80.0	-569	100
2018	-129	14.8	-470	54.1	-869	100
2019	-89.0	16.3	-186.0	34.1	-545.0	100
2020	-193.0	22.8	-225.0	26.6	-845.0	100
Average	-146.4	37.9	-201.3	41.8	-444.1	100

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Food Balance Bulletin, consecutive issues.

Fourth: Development of the value and quantity of imports and exports of sunflower oil in Egypt:

(1) Index for the development of the value of imports of sunflower oil in Egypt:

The data shown in Table (12) indicate that the total value of Egyptian imports of sunflower oil during the period (2001-2020) reached a minimum of about \$17.633 million in the year 2002, which is equivalent to about 67% of the base year 2001, and a maximum It amounted to about \$983.673 million in 2012, which is equivalent to about 3747% of the year 2001, with an annual average of \$271.113 million during the study period, which is equivalent to about 1033% of the year 2001.

By studying the general time trend equation for the development of the total value of Egyptian imports of sunflower oil during the period (2001-2020), the data from the first equation in Table (13) indicate that the total value of Egyptian imports of sunflower oil

increased by a statistically significant amount of about 18.02 million dollars. The model as a whole was proven statistically significant, and the coefficient of determination of about 0.194 indicates that about 19 % of the changes occurring in the total value of Egyptian imports of vegetable sunflower oil are due to the influence of factors explained by time.

(2) Index for the development of the quantity of imports of sunflower oil in Egypt:

The data shown in Table (12) indicate that the total amount of Egyptian imports of sunflower oil during the period (2001-2020) reached a minimum of about 25,875 thousand tons in 2002, which is equivalent to about 48% of the base year 2001, and a maximum It amounted to about 674.74 thousand tons in 2012, which is equivalent to about 1254% of the year 2001, with an annual average of 247.78 thousand tons during the study period, which is equivalent to about 461% of the year 2001.

Table 12. Index for the value, quantity and Price of Egyptian imports of sunflower oil during the period (2001-2020)

Years	Import value (million US dollars)	Import value index	Import quantity (thousand tons)	Import quantity index	Price of a ton of imports (dollars)	The index for the price of a ton of imports
2001	26.25	100	53.80	100	488	100
2002	17.63	67	25.88	48	681	140
2003	69.81	266	122.51	228	570	117
2004	72.46	276	115.50	215	627	129
2005	78.32	298	115.85	215	676	139
2006	78.72	300	126.90	236	620	127
2007	111.79	426	150.80	280	741	152
2008	247.73	944	139.00	258	1782	365
2009	250.86	956	124.37	231	2017	413
2010	253.69	966	149.39	278	1698	348
2011	482.02	1836	262.76	488	1834	376
2012	983.67	3747	674.74	1254	1458	299
2013	638.16	2431	446.57	830	1429	293
2014	529.92	2019	586.28	1090	904	185
2015	231.46	882	270.64	503	855	175
2016	381.69	1454	445.82	829	856	175
2017	310.47	1183	333.35	620	931	191
2018	320.72	1222	351.56	653	912	187
2019	255.00	971	354.54	659	719	147
2020	81.90	312	105.42	196	777	159
Average	271	1033	248	461	1029	211

Source: www.comtrade.UN.org, United Nation Statistics Division, Commodity trade Statistics database.

Table 13. General time trend equations for the development of the value, quantity, and price of a ton of sunflower oil imports in the Arab Republic of Egypt during the period (2001-2020)

No.	Dependent variable	Estimated equation	R ²	F
1	Import value (thousand tons)	$\hat{Y}_i = 81.89 + 18.02 X_i$ (0.79) (2.08)*	0.194	4.33*
2	Import quantity (million dollars)	$\hat{Y}_i = 57.44 + 18.12 X_i$ (0.824) (3.11)**	0.350	9.69
3	Import price (thousand dollars)	$\hat{Y}_i = 893.3 + 12.89 X_i$ (0.154) (0.68)*	0.025	0.46

whereas:

t = indicates the value of the t-test, R² = indicates the coefficient of determination of the study variables.

F = indicates the (F) test of the significance of the statistical model as a whole.

* indicates the significance of the coefficient at a significance level of 0.05, ** indicates statistical significance at a significance level of 0.01.

Source: Calculated from data in Table (12).

By examining the general time trend equation for the development of the total quantity of Egyptian imports of sunflower oil during the period (2001-2020), the data from the second equation in Table (13) indicate that the total quantity of Egyptian imports of sunflower oil increased by a statistically significant amount of about 18.12 thousand tons. The model as a whole was also proven statistically significant, and the coefficient of determination of about 0.350 indicates that about 35% of the changes occurring in the total amount of Egyptian imports of sunflower oil are due to the influence of factors explained by time.

(4) Index for the development of the value of sunflower oil exports in Egypt:

The data shown in Table (14) indicate that the total value of Egyptian exports of sunflower oil during the period (2001-2020) reached a minimum of about 452 thousand dollars in the year 2001, which is equivalent to about 100% of the same base year of 2001, and a maximum It amounted to about 154,691 thousand dollars in 2011, which is equivalent to about 34,224% of the year 2001, with an annual average of 34,104 thousand dollars during the study period, which is equivalent to about 7,545% of the year 2001.

By studying the general time trend equation for the development of the total value of Egyptian exports of sunflower oil during the period (2001-2020), the data from the first equation in Table (15) indicate that the total value of Egyptian exports of sunflower oil increased by a statistically significant amount of about 3281.22 thousand dollars. The model as a whole was statistically significant, and the coefficient of determination of about 0.490 indicates that about 49% of the changes occurring in the total value of Egyptian exports of vegetable sunflower oil are due to the influence of factors explained by time.

(5) Index for the development of the quantity of exports of sunflower oil in Egypt:

The data shown in Table (14) indicate that the total amount of Egyptian exports of sunflower oil during the period (2001-2020) reached a minimum of about 750 thousand tons in 2001, which is equivalent to about 100% of the same base year 2001, and a limit The maximum amounted to about 8,321 thousand tons in 2012, which is equivalent to about 7,760% of the year 2001, with an annual average of 27,172 thousand tons during the study period, which is equivalent to about 3,623% of the year 2001.

By studying the general time trend equation for the development of the total quantity of Egyptian exports of sunflower oil during the period (2001-2020), the data from the second equation in Table (15) indicate that the total quantity of Egyptian exports of sunflower oil increased by a statistically significant amount of about 3039.04 thousand tons. The model as a whole was statistically significant, and the coefficient of determination of about 0.539 indicates that about 53.9% of the changes occurring in the total amount of Egyptian exports of sunflower oil are due to the influence of factors explained by time.

(6) The development index of the price of a ton of sunflower oil exports:

The data shown in Table (14) indicate that the price of a ton of Egyptian exports of sunflower oil during the period (2001-2020) reached a minimum of about \$468 in 2002, which is equivalent to about 88% of the base year of 2001, and a maximum of It amounted to about \$2,658 in 2011, which is equivalent to about 441% of the year 2001, with an annual average of \$1,054 during the study period, which is equivalent to about 175% of the year 2001.

By studying the general time trend equation for the development of the price of a ton of Egyptian exports of sunflower oil during the period (2001-2020), the data from the third equation in Table (15) The price of a ton of Egyptian exports of sunflower oil is not statistically significant.

Table 14. Index for the value, quantity and Price of Egyptian exports of sunflower oil during the period (2001-2020)

Years	Export value (thousand dollars)	Export value index	Quantity of exports (thousand tons)	Export quantity index	Price of a ton of exports (dollars)	Index price per ton of exports
2001	452	100	750	100	603	100
2002	1420	314	2684	358	529	88
2003	2006	444	4290	572	468	78
2004	3193	706	4972	663	642	107
2005	1437	318	1538	205	934	155
2006	6170	1365	7725	1030	799	133
2007	4208	931	5295	706	795	132
2008	14871	3290	9401	1253	1582	262
2009	27128	6002	21400	2853	1268	210
2010	23400	5177	23100	3080	1013	168
2011	154691	34224	58202	7760	2658	441
2012	89790	19865	62409	8321	1439	239
2013	51955	11494	34901	4653	1489	247
2014	28563	6319	28563	3808	1000	166
2015	23886	5285	26148	3486	913	152
2016	82750	18308	89782	11971	922	153
2017	30901	6837	33413	4455	925	153
2018	29128	6444	32382	4318	900	149
2019	57956	12822	53796	7173	1077	179
2020	48179	10659	42693	5692	1128	187
Average	34104	7545	27172	3623	1054	175

Source: www.comtrade.UN.org, United Nation Statistics Division, Commodity trade Statistics database

Table 15. General time trend equations for the development of the value, quantity, and export price of sunflower oil in the Arab Republic of Egypt during the period (2001-2020)

No.	Dependent variable	Estimated equation	R ²	F
1	Export value (one thousand dollars)	$\hat{Y}_i = -348.6 + 3281.22 X_i$ * (-0.02) (2.44)*	0.49	5.97*
2	Export quantity (thousand tons)	$\hat{Y}_i = -4737.7 + 3039.04 X_i$ (-0.597) (4.58)**	0.539	21**
3	Export price (one thousand dollars)	$\hat{Y}_i = 789.4 + 25.16 X_i$ (0.6) (1.37)	0.094	1.87

whereas:

t = indicates the value of the t-test, R² = indicates the coefficient of determination of the study variables.

F = indicates the (F) test of the significance of the statistical model as a whole.

* indicates the significance of the coefficient at a significance level of 0.05, ** indicates statistical significance at a significance level of 0.01.

Source: Calculated from Table (14).

Fifth: Geographical distribution and relative importance of Egyptian imports of sunflower oil to the most important countries supplying oils to Egypt during the study period:

By studying the geographical distribution of Egyptian imports of sunflower oil, it is clear from the results shown in Table (16) that each of the countries (Russia, Argentina, France, Turkey, the Emirates, and Ukraine) are the most important countries from which Egypt imports vegetable oils. The results show that the total quantity and value of imports Egypt's sunflower oil amounts to about 215,622.2 tons and about 198,999.2 thousand dollars, representing about 83.41% and 84.24% of the total quantity and value of Egypt's imports of sunflower oil from the world, which amount to about 271,112.6 tons and about 247,784 thousand dollars during the study period (2001 - 2020). Ukraine is also the most important country from which Egypt imports sunflower oil. The minimum quantity of sunflower oil that Egypt imports from during the study period is about 5,600 tons, representing about 21.64% in 2002, and the maximum amount reached about 301,003 tons, representing about 44.35. % of the total amount of Egypt's imports of sunflower oil in 2015, as the average amount of Egypt's imports of sunflower oil from Ukraine reached about 72,479.8 tons, representing about 33.8% of the general average of the total amount of Egypt's imports of sunflower oil from the world.

The minimum value that Egypt imports from sunflower oil during the study period is about 38,120 thousand dollars, representing about 21.62% in 2002, and the maximum value reached about 223,432 thousand dollars, representing about 44.42% of the total value of Egypt's imports of sunflower oil in 2002. In 2015, the average value of Egypt's imports of sunflower oil from Ukraine amounted to about 75,572.5 thousand dollars, representing about 34.1% of the general average of the total value of Egypt's imports of sunflower oil from the world. Then Russia comes in second place. It is the most important country from which Egypt imports sunflower oil. The minimum quantity of sunflower oil that Egypt imports from during the study period is about

120 tons, representing about 0.10% in 2004, and the maximum amount reached about 263,041 tons. It represents about 74.82% of the total amount of Egypt's imports of sunflower oil in 2018, as the average amount of Egypt's imports of sunflower oil from Russia reached about 83,588.5 tons, representing about 25.76% of the general average of the total amount of Egypt's imports of sunflower oil from the world. The minimum value that Egypt imports from sunflower oil during the study period is about 198 thousand dollars, representing about 0.27% in 2004, and the maximum value reached about 329,966 thousand dollars, representing about 74.82% of the total value of Egypt's imports of sunflower oil in 2004. In 2018, the average value of Egypt's imports of sunflower oil from Russia amounted to about 88,863.9 thousand dollars, representing about 26.70% of the general average of the total value of Egypt's imports of sunflower oil from the world.

Then Argentina comes in third place. It is the most important country from which Egypt imports sunflower oil. The minimum quantity of sunflower oil that Egypt imports from during the study period is about 725 tons, representing about 0.71% in 2015, and the maximum amount reached about 128,999 tons. It represents about 19.12% of the total amount of Egypt's imports of sunflower oil in 2012, as the average amount of Egypt's imports of sunflower oil from Argentina reached about 40,832.8 tons, representing about 22.09% of the general average of the total amount of Egypt's imports of sunflower oil from the world.

The minimum value that Egypt imports from sunflower oil during the study period is about 41,802 thousand dollars, representing about 3.76% in 2015, and the maximum value reached about 187,996 thousand dollars, representing about 19.11% of the total value of Egypt's imports of sunflower oil in 2015. In 2012, the average value of Egypt's imports of sunflower oil from Argentina amounted to about 50,435.4 thousand dollars, representing about 22.75% of the general average of the total value of Egypt's imports of sunflower oil from the world.

Table (16): Geographical distribution of the quantity and value of Egyptian imports of sunflower oil from the most important countries in the world during the period (2001-2020)

Total Egyptian imports of sunflower oil from the world		Total Egyptian imports from these countries of sunflower oil		Ukraine		UAE		Türkiye		France		Argentina		Russia		years
Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
53800	26249	44385	23585	21772	10088	0	0	1327	1154	1368	786	15911	9957	4007	1600	2001
25875	17633	21158	14208	5600	3812	0	0	0	0	0	0	14053	9341	1505	1055	2002
122505	69807	114745	65648	79064	45241	0	0	0	0	130	129	34120	19453	1431	825	2003
115503	72461	110619	69444	68440	43118	0	0	0	0	0	0	42059	26128	120	198	2004
115853	78317	133937	72827	42680	28545	0	0	0	0	31792	1942	47043	34049	12422	8291	2005
126899	78715	122318	75777	62265	36578	158	128	0	0	93	98	41850	27906	17952	11067	2006
150803	111786	137349	101379	109170	80211	257	259	0	0	31	17	6795	5788	21096	15104	2007
139000	247731	61878	161859	0	76684	157	334	302	296	21	50	61184	81750	214	2745	2008
124374	250860	122427	246082	73802	169453	0	0	76	323	46	145	36180	58264	12323	17897	2009
149394	253686	22125	54441	0	0	5	16	151	577	47	185	20810	47949	1112	5714	2010
262763	482016	262525	481557	112768	216981	0	0	554	1180	124	235	105863	186206	43216	76955	2011
674742	983673	341352	497692	0	0	44	77	682	1182	77	135	128999	187996	211550	308302	2012
446572	638159	446120	637951	223432	301003	19	46	532	829	98	171	75274	114428	146765	221474	2013
586277	529921	481839	474870	215004	191463	63	130	582	747	112	163	13050	10282	253028	272085	2014
270642	231458	203831	205042	120285	102661	186	238	895	1222	155	213	1911	8702	80399	92006	2015
445817	381687	219105	244655	151226	132023	21	25	747	894	95	114	725	41802	66291	69797	2016
333349	310469	323674	305651	60502	59946	0	0	127	138	176	192	55443	51753	207426	193622	2017
351562	320720	351250	320436	62229	56770	97	88	113	103	10	9	25760	23500	263041	239966	2018
354544	255002	354209	254340	13548	11952	0	0	147	162	14	17	89626	63454	250874	178755	2019
105422	81902	105139	81683	27810	21606	0	0	237	184	93	73	0	0	76999	59820	2020
247785	271113	198999	219456	72480	79407	50.35	67.05	323.6	449.55	1724.1	233.7	40833	50435	83589	88864	Average

Source: www.comtrade.UN.org, United nation Statistics Division, Commodity trade Statistics database

Table (17): The relative importance of the value and quantity of Egyptian imports of sunflower oil from the most important countries in the world during the period (2001-2020)

Total Egyptian imports from these countries of sunflower oil		Ukraine		UAE		Türkiye		France		Argentina		Russia		years
Quantity %	Value %	Quantity %	Value %	Quantity %	Value %	Quantity %	Value %	Quantity %	Value %	Quantity %	Value %	Quantity %	Value %	
82.50	89.85	40.47	38.43	0.00	0.00	2.47	4.40	2.54	2.99	29.57	37.93	7.45	6.10	2001
81.77	80.58	21.64	21.62	0.00	0.00	0.00	0.00	0.00	0.00	54.31	52.97	5.82	5.98	2002
93.67	94.04	64.54	64.81	0.00	0.00	0.00	0.00	0.11	0.18	27.85	27.87	1.17	1.18	2003
95.77	95.84	59.25	59.51	0.00	0.00	0.00	0.00	0.00	0.00	36.41	36.06	0.10	0.27	2004
115.61	92.99	36.84	36.45	0.00	0.00	0.00	0.00	27.44	2.48	40.61	43.48	10.72	10.59	2005
96.39	96.27	49.07	46.47	0.12	0.16	0.00	0.00	0.07	0.12	32.98	35.45	14.15	14.06	2006
91.08	90.69	72.39	71.75	0.17	0.23	0.00	0.00	0.02	0.02	4.51	5.18	13.99	13.51	2007
44.52	65.34	0.00	30.95	0.11	0.13	0.22	0.12	0.02	0.02	44.02	33.00	0.15	1.11	2008
98.43	98.10	59.34	67.55	0.00	0.00	0.06	0.13	0.04	0.06	29.09	23.23	9.91	7.13	2009
14.81	21.46	0.00	0.00	0.00	0.01	0.10	0.23	0.03	0.07	13.93	18.90	0.74	2.25	2010
99.91	99.90	42.92	45.02	0.00	0.00	0.21	0.24	0.05	0.05	40.29	38.63	16.45	15.97	2011
50.59	50.60	0.00	0.00	0.01	0.01	0.10	0.12	0.01	0.01	19.12	19.11	31.35	31.34	2012
99.90	99.97	50.03	47.17	0.00	0.01	0.12	0.13	0.02	0.03	16.86	17.93	32.86	34.71	2013
82.19	89.61	36.67	36.13	0.01	0.02	0.10	0.14	0.02	0.03	2.23	1.94	43.16	51.34	2014
75.31	88.59	44.44	44.35	0.07	0.10	0.33	0.53	0.06	0.09	0.71	3.76	29.71	39.75	2015
49.15	64.10	33.92	34.59	0.00	0.01	0.17	0.23	0.02	0.03	0.16	10.95	14.87	18.29	2016
97.10	98.45	18.15	19.31	0.00	0.00	0.04	0.04	0.05	0.06	16.63	16.67	62.22	62.36	2017
99.91	99.91	17.70	17.70	0.03	0.03	0.03	0.03	0.00	0.00	7.33	7.33	74.82	74.82	2018
99.91	99.74	3.82	4.69	0.00	0.00	0.04	0.06	0.00	0.01	25.28	24.88	70.76	70.10	2019
99.73	99.73	26.38	26.38	0.00	0.00	0.22	0.22	0.09	0.09	0.00	0.00	73.04	73.04	2020
83.41	85.79	33.88	35.64	0.03	0.04	0.21	0.33	1.53	0.32	22.09	22.76	25.67	26.70	Average

Source: www.comtrade.UN.org, United nation Statistics Division, Commodity trade Statistics database

Sixth: Development of the quantity and value of soybean oil imports in Egypt:

(1) Index for the development of the value of imports of soybean oil in Egypt:

The data shown in Table (18) indicate that the total value of Egyptian imports of soybean oil during the period (2001-2020), with a minimum reaching about 76 thousand dollars in 2012, which is equivalent to about 10% of the base year 2001, and a maximum It amounted to about 5,996 thousand dollars in 2016, which is equivalent to about 762% of the year 2001, with an annual average of 1,506 thousand dollars during the study period, which is equivalent to about 191% of the year 2001.

By studying the general time trend equation for the development of the total value of Egyptian imports of soybean oil during the period (2001-2020), the data from the first equation in Table (19) indicate that the total value of Egyptian imports of soybean oil increased by a statistically significant amount of about 99 thousand dollars. The model as a whole was statistically significant, and the coefficient of determination of about

0.115 indicates that about 11% of the changes occurring in the total value of Egyptian imports of vegetable soybean oil are due to the influence of factors explained by time.

(2) The index for the development of the quantity of soybean oil imports in Egypt:

The data shown in Table (18) indicate that the total amount of Egyptian imports of corn oil during the period (2001-2020) reached a minimum of about 65 thousand tons in 2012, which is equivalent to about 3% of the base year 2001, and a maximum of about 75,790 thousand tons in 2016, which is equivalent to about 396% of the year 2001, with an annual average of 1,753 thousand tons during the study period, which is equivalent to about 91% of the year 2001.

By studying the general time trend equation for the development of the total amount of Egyptian imports of soybean oil during the period (2001-2020), the data from the second equation in Table (19) **The quantity of Egyptian imports of soybean oil, the significance of the model as a whole was not proven statistically.**

Table 18. Index for the value, quantity and price of Egyptian imports of soybean oil during the period (2001-2020)

Years	Import value (million US dollars)	Import value index	Import quantity (thousand tons)	Import quantity index	Price of a ton Of imports (dollars)	The index for the price of a ton of imports
2001	787	100	1934	100	407	100
2002	923	117	1798	93	513	126
2003	632	80	1157	60	546	134
2004	601	76	965	50	622	153
2005	570	72	977	51	583	143
2006	306	39	530	27	578	142
2007	805	102	1059	55	760	187
2008	378	48	258	13	1466	360
2009	831	106	531	27	1565	385
2010	162	21	160	8	1018	250
2011	5538	704	3658	189	1514	372
2012	76	10	65	3	1179	290
2013	2318	295	1447	75	1602	394
2014	1504	191	1596	83	942	232
2015	4409	560	5752	297	767	188
2016	5996	762	7579	392	791	194
2017	1232	157	1469	76	838	206
2018	1073	136	1356	70	791	194
2019	1628	207	2302	119	707	174
2020	354	45	464	24	763	187
Average	1506	191	1753	91	898	221

Source: www.comtrade.UN.org, United Nation Statistics Division, Commodity trade Statistics database.

(3) Index of development of the price of imported soybean oil:

The data shown in Table (18) indicate that the price of a ton of Egyptian imports of soybean oil during the period (2001-2020) reached a minimum of about 407 dollars in 2001, which is equivalent to about 100% of the base year 2001. The maximum amounted to about \$1018 in 2009, which is equivalent to about 385% of the base year 2001, with an annual average of \$898

during the study period, which is equivalent to about 221% of the year 2001.

By studying the general time trend equation for the development of the price of a ton of Egyptian imports of soybean oil during the period (2001-2020), the data from the third equation in Table (19) **The price of a ton of Egyptian imports of soybean oil is not statistically significant.**

Table 19. General time trend equations for the development of the total value, quantity, and price of tons of imports of soybean oil in the Arab Republic of Egypt during the period (2001-2020)

No.	Dependent variable	Estimated equation	R ²	F
1	Import value (thousand tons)	$\hat{Y}_i = 456.9 + 99.92 X_i$ (1.537)	0.115	0.094
2	Import quantity (million dollars)	$\hat{Y}_i = 792.8 + 91.4 X_i$ (1.45) (3.37)**	0.081	1.58
3	Import price (thousand dollars)	$\hat{Y}_i = 757.28 + 16.41 X_i$ (1.18)**	0.068	1.30

Where:

t = indicates the value of the t-test, R² = indicates the coefficient of determination for the study variables.

F = indicates the (F) test of the significance of the statistical model as a whole.

* indicates the significance of the coefficient at a significance level of 0.05, ** indicates statistical significance at a significance level of 0.01.

Source: Calculated from data in Table (18).

Table 20. Index for the value and quantity of Egyptian soybean oil exports during the period (2001-2020)

Years	Export value (thousand dollars)	Export value index	Quantity of exports (thousand tons)	Export quantity index	Price of a ton of exports (dollars)	Index price per ton of exports
2001	44	100	74	100	595	100
2002	168	382	269	364	625	105
2003	2561	5820	3211	4339	798	134
2004	1105	2511	1907	2577	579	97
2005	3100	7045	4333	5855	715	120
2006	2945	6693	4557	6158	646	109
2007	1740	3955	2903	3923	599	101
2008	2660	6045	4228	5714	629	106
2009	2835	6443	4549.2	6148	623	105
2010	3010	6841	4870.4	6582	618	104
2011	26197	59539	20394	27559	1285	216
2012	57603	130916	39600	53514	1455	245
2013	40682	92459	31154	42100	1306	220
2014	75139	170770	85361	115353	880	148
2015	75344	171236	139568	188605	540	91
2016	2762	6277	3721	5028	742	125
2017	42256	96036	40163	54274	1052	177
2018	57073	129711	68315	92318	835	141
2019	124854	283759	187826	253819	665	112
2020	188268	427882	249639	337350	754	127
Average	35517.3	80721.14	44832.13	60583.96	797.1	134.05

Source: www.comtrade.UN.org, United Nation Statistics Division, Commodity trade Statistics database.

(4) The index for the development of the value of soybean oil exports in Egypt:

The data shown in Table (20) indicate that the total value of Egyptian exports of soybean oil during the period (2001-2020) reached a minimum of about 44 thousand dollars in the year 2001, which is equivalent to about 100% of the base year 2001, and a maximum of About 188,268 thousand dollars in 2020, which is equivalent to about 427,882% of the year 2001, with an annual average of 355,517 thousand dollars during the study period, which is equivalent to about 80,721% of the year 2001.

By studying the general time trend equation for the development of the total value of Egyptian exports of soybean oil during the period (2001-2020), the data from the first equation in Table (21) indicate that the total value of Egyptian exports of soybean oil increased by a statistically significant amount of about 6,457 thousand dollars. The model as a whole was also proven statistically significant, and the coefficient of determination of about 0.57 indicates that about 57% of the changes occurring in the total value of Egyptian exports of vegetable soybean oil are due to the influence of factors explained by time.

(5) Index for the development of the quantity exports of soybean oil in Egypt:

The data shown in Table (20) indicate that the total amount of Egyptian exports of soybean oil during the period (2001-2020) reached a minimum of about 74 tons in 2001, which is equivalent to about 100% of the base year of 2002, and a maximum of about 249,639 thousand tons in 2020, which is equivalent to about 337,350% of the year 2002, with an annual average of 44,832 thousand tons during the study period, which is equivalent to about 60,583% of the year 2002.

By studying the general time trend equation for the development of the total quantity of Egyptian exports of soybean oil during the period (2001-2020), the data from the second equation in Table (21) indicate that the total quantity of Egyptian exports of corn oil increased by a statistically significant amount of about 8605 thousand tons, as The model as a whole was statistically

significant, and the coefficient of determination of about 0.52 indicates that about 52% of the changes occurring in the total quantity of Egyptian exports of soybean oil are due to the influence of factors explained by time.

(6) Index for the development of the price exports of soybean oil:

The data shown in Table (20) indicate that the price of a ton of Egyptian corn oil exports during the period (2001-2020) reached a minimum of about \$579 in 2004, which is equivalent to about 97% of the base year 2001, and a maximum of About \$1,455 in 2012, which is equivalent to about 245% of 2012, with an annual average of \$797.6 during the study period, which is equivalent to about 134% of 2002.

By studying the general time trend equation for the development of the price of a ton of Egyptian exports of soybean oil during the period (2001-2020), the data from the third equation in Table (21) indicate that the price of a ton of Egyptian exports of soybean oil is estimated by estimating the general time trend, the price of a ton of Egyptian exports under study. It is unstable and does not fit any mathematical picture. It is characterized by relative stability around its arithmetic mean, due to the presence of fluctuations or instability in the data that exposes it to irregular fluctuations.

Seventh: Geographical distribution and relative importance of Egyptian imports of soybean oil to the most important countries supplying oils to Egypt during the study period.

By studying the geographical distribution of Egyptian imports of soybean oil, it is clear from the results shown in Table (22) that each of the countries (Argentina, the United States of America, Brazil, the Netherlands, Germany) are the most important countries from which Egypt imports vegetable oils and soybean oil. The results show that the average The total quantity and value of Egypt's imports of soybean oil, including about 141.951 tons, 121.813 thousand dollars, representing about 84.84%, 83.24% of the total quantity and value of Egypt's imports of soybean oil from the world, which amount to about 175,285 tons, 150,615 thousand dollars during the period (2001-2020).

Table 21. General time trend equations for the development of the total value, quantity, and average price of a ton of soybean oil exports in the Arab Republic of Egypt during the period (2001 – 2020)

No.	Dependent variable	Estimated equation	R ²	F
1	Export value (thousand tons)	$\hat{Y}_i = -32281 + 6457X_i$ * (-2.07) (4.97)*	0.57	24.7**
2	Export quantity (thousand dollars)	$\hat{Y}_i = -45522 + 8605.2 X_i$ (-1.97) (4.47)**	0.526	20**

whereas:

T = indicates the value of the t-test, R² = indicates the coefficient of determination of the study variables.

F = indicates the (F) test of the significance of the statistical model as a whole.

*indicates the significance of the coefficient at a significance level of 0.05, ** indicates statistical significance at a significance level of 0.01.

Source: Calculated from data in Table (20).

Table (22): Geographical distribution of the quantity and value of Egyptian imports of soybean oil from the most important countries in the world during the period (2001-2020)

Total soybean oil from countries world		Total soybean oil in these countries		Germany		Netherlands		Brazil		USA		Argentina		years
Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	
787	1934	65049	168696	9189	27520			14080	34201	12635	36199	29145	70776	2001
923	1798	74864	149554	3155	6000			14891	31225	3148	5998	53670	106331	2002
632	1157	56478	106753	31	16			5426	11140	18089	33407	32932	62190	2003
601	965	48739	79826	10314	18714	1673	3000	16196	25250	35	73	20521	32789	2004
570	977	47726	84182	18	12			9763	14402	69	59	37876	69709	2005
306	530	21067	39154	1638	3018			6988	13075	90	129	12351	22932	2006
805	1059	60778	83385	66	42			17196	24862			43516	58481	2007
378	258	0	0									0	0	2008
831	531	69613	38054	115	35	3639	1914			0	0	65859	36105	2009
162	160	0	0									0	0	2010
5538	3658	485257	322813	6594	5059	35	17	122440	71463	0	0	356188	246274	2011
76	65	0	0	0	0									2012
2318	1447	216065	130470	5222	4500	16810	15000	26092	11100	33759	30000	134182	69870	2013
1504	1596	98822	102785	97	46			35695	39139	8968	9001	54062	54599	2014
4409	5752	294830	386130	73306	91140	32777	39790	21343	28000	5153	6014	162251	221186	2015
5996	7579	508449	642352	15336	18285	15465	19400	4170	5000	14307	18499	459171	581168	2016
1232	1469	118985	141947	36	43			1789	2134			117160	139770	2017
1073	1356	105124	132625	30	37	27	34					105067	132554	2018
1628	2302	147348	208377	28	15	8	1					147312	208361	2019
354	464	17058	21920	4	6	3	4					17051	21910	2020
1506.15	1752.85	121813	141951	6954	9694	7826	8796	22775	23922	8021	11615	97280	112369	Average

Source: www.comtrade.UN.org, United nation Statistics Division, Commodity trade Statistics database

Argentina is also ranked first and one of the most important countries from which Egypt imports soybean oil. The minimum quantity of soybean oil imported from Egypt during the study period is about 32,789 tons, representing about 33.98% in 2004, and the maximum amount reached about 132,554 tons, representing about 97.75% of the total amount of Egypt's imports of soybean oil in 2018, as the average amount of Egypt's imports of soybean oil from Argentina reached about 114,569 tons, representing about 60.84% of the general average of the total amount of Egypt's imports of soybean oil from Argentina.

The minimum value that Egypt imports of soybean oil during the study period is about 20,521 thousand dollars, representing about 34.14% in 2004, and the maximum value reached about 105,067 thousand dollars, representing about 97.92% of the total value of Egypt's imports of soybean oil in 2018. The average value of Egypt's imports of soybean oil from Argentina reached about 100,122 thousand dollars, representing about 61.24% of the general average of the total value of Egypt's imports of soybean oil from Argentina.

Then the country of Brazil comes in second place. It is the most important country from which Egypt imports soybean oil. The minimum quantity that Egypt imports from soybean oil during the study period is about 5,000 tons, representing about 0.660% in 2016, and the maximum amount reached about 25,250 tons, representing About 26.17% of the total amount of

Egypt's imports of soybean oil in 2004, as the average amount of Egypt's imports of corn oil from Brazil reached about 23,922 tons, representing about 9.62% of the general average of the total amount of Egypt's imports of soybean oil from Brazil.

Whereas the minimum value that Egypt imports of soybean oil during the study period is about 4,170 thousand dollars, representing about 0.70% in 2016, and the maximum value reached about 16,196 thousand dollars, representing about 26.95% of the total value of Egypt's imports of corn oil in 2004. The average value of Egypt's imports of soybean oil from Brazil reached about 22,775 thousand dollars, representing about 9.75% of the general average of the total value of Egypt's imports of soybean oil from Brazil.

Then the United States of America comes in third place. It is the most important country from which Egypt imports soybean oil. The minimum quantity of soybean oil that Egypt imports from during the study period is about 129 tons, representing about 0.24% in 2006, and the maximum amount reached about 33,407 tons, representing about 28.87% of the total amount of Egypt's imports of soybean oil in 2003, as the average amount of Egypt's imports of soybean oil from the United States of America was about 11,615 tons, representing about 4.6% of the general average of the total amount of Egypt's imports of soybean oil from USA.

The minimum value that Egypt imports of soybean oil during the study period is about 35 thousand dollars,

Table (23): The relative importance of the quantity and value of Egyptian imports of soybean oil from the most important countries in the world during the period (2001-2020)

Total soybean oil in these countries		Germany		Netherlands		Brazil		USA		Argentina		years
Value %	Quantity %	Value %	Quantity %	Value %	Quantity %	Value %	Quantity %	Value %	Quantity %	Value %	Quantity %	
82.65	87.23	11.68	17.68	0.00	0.00	17.89	17.68	16.05	18.72	37.03	36.60	2001
81.11	83.18	3.42	17.37	0.00	0.00	16.13	17.37	3.41	3.34	58.15	59.14	2002
89.36	92.27	0.05	9.63	0.00	0.00	8.59	9.63	28.62	28.87	52.11	53.75	2003
81.10	82.72	17.16	26.17	2.78	3.11	26.95	26.17	0.06	0.08	34.14	33.98	2004
83.73	86.16	0.03	14.74	0.00	0.00	17.13	14.74	0.12	0.06	66.45	71.35	2005
68.85	73.88	5.35	24.67	0.00	0.00	22.84	24.67	0.29	0.24	40.36	43.27	2006
75.50	78.74	0.08	23.48	0.00	0.00	21.36	23.48	0.00	0.00	54.06	55.22	2007
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2008
83.77	71.66	0.14	0.00	4.38	3.60	0.00	0.00	0.00	0.00	79.25	67.99	2009
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2010
87.62	88.25	1.19	19.54	0.01	0.00	22.11	19.54	0.00	0.00	64.32	67.32	2011
0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2012
93.21	90.17	2.25	7.67	7.25	10.37	11.26	7.67	14.56	20.73	57.89	48.29	2013
65.71	64.40	0.06	24.52	0.00	0.00	23.73	24.52	5.96	5.64	35.95	34.21	2014
66.87	67.13	16.63	4.87	7.43	6.92	4.84	4.87	1.17	1.05	36.80	38.45	2015
84.80	84.75	2.56	0.66	2.58	2.56	0.70	0.66	2.39	2.44	76.58	76.68	2016
96.58	96.63	0.03	1.45	0.00	0.00	1.45	1.45	0.00	0.00	95.10	95.15	2017
97.97	97.81	0.03	0.00	0.03	0.03	0.00	0.00	0.00	0.00	97.92	97.75	2018
90.51	90.52	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.49	90.51	2019
48.19	47.24	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	48.17	47.22	2020
83.88	84.14	3.03	9.62	1.22	1.33	9.75	9.62	3.63	4.06	61.24	60.84	Average

Source: www.comtrade.UN.org, United nation Statistics Division, Commodity trade Statistics database

representing about 0.56% in 2004, and the maximum value reached about 33,759 thousand dollars, representing about 14% of the total value of Egypt's imports of soybean oil in 2004. In 2013, the average value of Egypt's imports of soybean oil from the United States of America amounted to about 8,021 thousand dollars, representing about 3.63% of the general average of the total value of Egypt's imports of soybean oil from the United States of America.

Then Germany comes in fourth place. It is the most important country from which Egypt imports soybean oil. The minimum quantity of soybean oil that Egypt imports from during the study period is about 6 tons in 2020, and the maximum amount reached about 18,714 tons, representing about 26.17% of The total amount of Egypt's imports of corn oil in 2004, as the average amount of Egypt's imports of soybean oil from Germany amounted to about 10,055 tons, representing about 9.62% of the general average of the total amount of Egypt's imports of soybean oil from Germany.

Whereas the minimum value that Egypt imports from soybean oil during the study period is about 4 thousand dollars in 2020, and the maximum value reached about 10,314 thousand dollars, representing about 17.16% of the total value of Egypt's imports of soybean oil in 2004, where the average value reached Egypt's imports of soybean oil from Germany amounted to about 7,377 thousand dollars, representing about

9.62% of the general average of the total value of Egypt's imports of soybean oil from Germany.

Then the Netherlands also comes in fifth place. It is the most important country from which Egypt imports soybean oil. The minimum quantity of corn oil that Egypt imports from it during the study period is about a ton in 2019, and the maximum amount reached about 39,790 tons, representing about 6.92% of the total. The amount of Egypt's imports of soybean oil in 2015, as the average amount of Egypt's imports of soybean oil from the Netherlands amounted to about 8796 tons, representing about 1.33% of the general average of the total amount of Egypt's imports of soybean oil from the Netherlands.

Whereas the minimum value that Egypt imports of soybean oil during the study period is about 3 thousand dollars in 2020, and the maximum value reached about 32,777 thousand dollars, representing about 7.43% of the total value of Egypt's imports of soybean oil in 2015, where it reached The average value of Egypt's imports of soybean oil from the Netherlands is about 7,826 thousand dollars, representing about 1.22% of the general average of the total value of Egypt's imports of soybean oil from the Netherlands (Table 23).

Recommendations:

Based on the research findings, a set of recommendations were proposed that help reduce the nutritional gap in oils, which are:

- 1- Develop a strategy to promote oil crops through:**
- A.** Contract cultivation of oil crops in the highest-ranking governorates, such as: (Minya, Beni Suef, and Assiut governorates), for cultivation of soybeans, and these governorates are the largest in area and production of soybean crops.
 - B.** As well as Nubaria, Beheira Governorate, and Fayoum Governorate, the largest in area and production of sunflower crops.
 - C.** Planting oil crops on top of each other, such as planting soybean crops with corn crops, as well as peanut crops with sunflower crops. Experiments were conducted on loading crops with good results, and thus to increase profit.
 - D.** Using guidance methods to contact farmers to advise them of new developments in terms of planting loads, good varieties, and planting dates.
- 2- Changing the nutritional behavior pattern of Egyptian families that depend on oils as a main source of food.**
- 3- Working to increase the production capacity of oil factories, facilitate contracting with them with large land areas and high productivity, and improve the level of economic, production and marketing efficiency of these oil crops.**

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الملخص العربي

دراسة تحليلية لإنتاج واستهلاك بعض المحاصيل الزيتية في جمهورية مصر العربية

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بنسبة ٢٤,٣% ثم تأتي في المرتبة الثالثة محافظة الفيوم بنسبة ١٧,٢% من إجمالي مساحة المحافظات المزروعة بمحصول دوار الشمس. كما تزايد كمية الغذاء الصافي من الزيوت النباتية بمقدار ٥٦,٤٩ ألف طن بمعدل ٥,٤% من متوسط إجمالي كمية الغذاء الصافي والمقدر بحوالي ١١١٤,٧ طن، وتركز استيراد زيت دوار الشمس لمصر من دولة روسيا المرتبة الأولى وتمثل بنحو ٤٠% من قيم الاستيراد زيت دوار الشمس من إجمالي الدول التي تستورد منها مصر ثم تأتي أوكرانيا في المرتبة الثانية وتمثل نحو ٣٦% من كمية الاستيراد زيت دوار الشمس، ثم تأتي في المرتبة الثالثة دولة الأرجنتين وتمثل نحو ٢٠,٥١% من كمية الاستيراد زيت دوار الشمس، وتركزت أيضاً الاستيراد زيت فول الصويا من دولة الأرجنتين وتكون هي المرتبة الأولى من الاستيراد زيت فول الصويا بنسبة ٧٩%، ثم تأتي البرازيل في المرتبة الثانية وتمثل حوالي ١٨,٨% من كمية الاستيراد زيت فول الصويا من إجمالي دول العالم، ثم تأتي الولايات المتحدة في المرتبة الثالثة وتمثل نحو ٨,١٨% من كمية الاستيراد لزيت فول الصويا من إجمالي دول العالم.

الكلمات المفتاحية: الزيوت النباتية، زيت فول الصويا،

زيت دوار الشمس، الفجوة الغذائية.

تعاني مصر من فجوة غذائية كبيرة في الزيوت النباتية نظراً لزيادة الطلب عليها نتيجة للزيادة المستمرة في عدد السكان من ناحية، وانخفاض الإنتاج المحلي بحوالي ٢٨,٢٢ ألف طناً خلال فترة الدراسة من ناحية أخرى، وكذلك تناقص مساحة الأراضي الزراعية المزروعة بالمحاصيل الزيتية حيث بلغ حوالي ٢٨,٢٥ ألف فدان كمتوسط خلال الفترة (٢٠٠١-٢٠٢٠)، ويهدف البحث إلى دراسة الوضع الراهن لإنتاج واستهلاك الزيوت النباتية من خلال التعرف علي تطور كمية الإنتاج المحلي للزيوت النباتية وكمية الغذاء الصافي وحجم الفجوة الزيتية من زيوت فول الصويا وزيت دوار الشمس. وتبين أن كمية الإنتاج المحلي من الزيوت بمقدار ٦٧٠ ألف طن، كما تركزت زراعة محصول فول الصويا في محافظة المنيا بنسبة ٧٤,٦% من إجمالي المساحة المزروعة في مصر، ثم محافظة بني سويف في المرتبة الثانية من حيث زراعة محصول فول الصويا بنسبة ١٠,٤% ثم تأتي في المرتبة الثالثة محافظة أسيوط بنسبة ٥% من إجمالي مساحة المحافظات المزروعة فول الصويا، كما تركزت زراعة محصول دوار الشمس في محافظه النوبارية بنسبة ٢٦,٥% من إجمالي المساحة المزروعة في مصر، ثم محافظة البحيرة في المرتبة الثانية من حيث زراعة محصول دوار الشمس