International Journal of Life Science and Agriculture Research

ISSN (Print): 2833-2091, ISSN (Online): 2833-2105

Volume 02 Issue 10 October 2023

DOI: https://doi.org/10.55677/ijlsar/V02I10Y2023-04

Page No : 366-374

Economic Study of the Impact of the Value of Egypt's Agricultural Production on Gross Domestic Product (GDP)

Elham Nassim Shams Eldin[1], Hany Mohamed Ali Abo Elella[2]

[1]DR- Agricultural Research Center - Ministry of Agriculture and Reclamation of Egyptian Lands.

[2]DR- Egyptian Company for Solid Waste Recycling

ABSTRACT: The gross domestic product expresses the economic value of goods and services dur ing a specific period of time, and the agricultural sector affects the value of the gross domestic prod uct. The problem of the research lies in the low contribution of the value of agricultural output to th e value of the gross domestic product. Therefore, the research aims to study the value of agricultura l production and find out the extent of its impact on the value of the output. Gross domestic. It was shown from the results that a one-unit increase in the value of the total agricultural production, plan t production, animal production, and fish production on a trip basis leads to an increase in the value of the gross domestic product by 6.95, 12.99, 19.32, and 58.59 billion pounds, respectively, as the s tability became clear. The relative values of plant production, animal production, fish production, fi eld crops, vegetable crops, and fruit crops, respectively, where the coefficient of variation was estim ated at approximately 0.34%, 0.36%, 0.49%, 0.32%, 0.40%, and 0.38%, respectively, during the stu dy period. While it was found that the production values of medicinal and aromatic plants were rela tively unstable, the coefficient of variation was estimated at about 0.58%. Studying the developmen t of the total production values of field crops in the three loops shows the relative stability of the pr oduction values of winter, summer, and indigo field crops, respectively, as the coefficient of variati on reached about 0.33%, 0.32%, and 0.26%, respectively.

KEYWORDS: Value of agricultural production – GDP

Published Online: 09 October 2023

Corresponding Author: Elham Nassim Shams Eldin

INTRODUCTION

The agricultural sector is considered one of the most important sectors in the Egyptian economy. This sector bears the greatest burden in providing food to citizens and generating the raw materials necessary for the establishment of national industries, in addition to being one of the most important sectors that absorbs the largest part of the workforce. What enhances its position in the national economy is the strength of its interconnected and interconnected relationships with the economies of other countries.Gross domestic product expresses the total economic value of goods and services produced by countries during a specific period of time, which in turn leads to understanding economic performance, allowing policy makers to easily make political and economic decisions and evaluate their impact. The agricultural sector has a significant impact on the gross domestic product, especially in countries that depend on agriculture, such as the Arab Republic of Egypt. According to statistics for the year 2021, the value of the contribution of agricultural production amounted to about 472.517 billion pounds of the gross domestic product, which amounts to about 4128.1 billion pounds, at a rate estimated at about 18%. However, in light of what. The state has given great importance to agricultural production in Egypt's Vision 2030 and has set many strategic goals to support this sector. The value of the contribution of agricultural production to the value of the gross domestic product is considered relatively low as it is a basic pillar of the national economy.

RESEARCH PROBLEM

Despite the importance of the agricultural sector and the status the state has given it in the national economy and its consideration as one of the most important basic pillars on which Egypt's Vision 2030 is based, the value of agricultural production still achieves relatively low growth rates, in addition to the difficulty of estimating the actual values of some components of that sector, which leads to To a decrease in the contribution of the value of agricultural output to the value of the gross domestic product.

RESEARCH OBJECTIVE

The research aims primarily to study the value of agricultural production and determine the extent of its impact on the value of the gross domestic product by achieving the following sub-objectives:

1- Study the development of the value of the gross domestic product and the value of agricultural production, plant production, animal production, and fish production, and the percentage of each of them's contribution to the output. The gross domestic product during the period (2012-2021).

2- Study of the development of the total value of agricultural production and the value of plant production, animal production, and fish production during the period (2012-2021).

3- Study of the total value of field crop production in the three agricultural periods during the period. (2012-2021).

RESEARCH METHOD AND DATA SOURCES

In achieving its objectives, the research relied on the use of descriptive and quantitative analysis methods, as it relied on general time trend equations to study the development of the value of gross domestic product and the value of agricultural production, as well as estimating the simple linear regression equation. The research also relied on published and unpublished secondary data sources, as it relied on data Central Agency for Public Mobilization and Statistics, Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Income Estimates Bulletin.

RESULTS AND DISCUSSIONS

First: The development of the value of the gross domestic product and the values of total agricultural production, plant production, animal production, and fish production, and the percentage of contribution of each of them to the gross domestic product during the period (2012-2021).

Studying the data in Table (1) shows that the value of the gross domestic product during the period (2012-2021) ranged between a minimum of about 913.8 billion pounds in 2012 and a maximum of about 4128.1 billion pounds in 2021, with an annual average estimated at about 2567.250 billion pounds with acoefficient of variation. It amounted to about 0.466%.

$$\mathbf{Y= -473.78 + 6.95X}$$
$$(-0.94)^{N.S} \quad (6.39)^{**}$$

Through simple linear regression analysis, the significance of the model was found at a significance level of 1%, where the value of F was about 40.85. This was shown from the equation that an increase of one unit in the value of agricultural production leads to an increase in the value of the gross domestic product by 6.95 billion pounds. The value of the coefficient of determination of about 0.836 indicates that about 83.6% of the changes in the value of the GDP are reflected in the value of agricultural production, and that about 16.4% of the changes in the value of the GDP are reflected by factors that were not mentioned.

While the annual average value of the total agricultural production was About 437.382 billion pounds, which ranged between a minimum amounting to about 267.424 billion pounds in 2012, contributing about 29.3% of the GDP, and a maximum amounting to about 742.517 billion pounds in 2021, representing about 18% of the GDP. This has been shown from the table data that the lowest A contribution amounting to about 500.413 billion pounds, representing about 13.7% of the gross domestic product in 2018.

By studying the general time trend equation for the value of agricultural production shown in Equation (1) in Table (3), it was found that the value of agricultural production took a general increasing trend during the study period, with an annual increase estimated at about 50.11 billion pounds, equivalent to about 11.46% of its annual average. The significance of this increase was confirmed statistically at a significance level of 1%. The value of the coefficient of determination was about 0.928, which indicates that about 92.8% of the changes in agricultural production values are due to factors whose effect reflects the time factor.

Table (1) The value of the gross domestic product, the values of total agricultural production, plant production, animal production, and fishery production, and the percentage contribution of each of them to the gross domestic product during the period (2012-2021).

Year	Gross Domestic Product (GDP) Value	Agricultural production value	Value of plant production	Value of animal production	Value of Fish production	Percentage of agricultural production's contribution to the gross domestic product	Percentage of contribution of plant production to the gross domestic product	Percentage of livestock production's contribution to the gross domestic product	Percentage of fish production contribution to the gross domestic product
	billion EGP	billion EGP	billion EGP	billion EGP	billion EGP				
2012	913.8	267.424	160.802	88.97	17.652	29.3	17.6	9.7	1.9
2013	1608.6	282.435	165.028	97.781	19.626	17.6	10.3	6.1	1.2
2014	1761.2	305.414	170.953	112.181	22.28	17.3	9.7	6.4	1.3
2015	1838.2	319.549	176.734	119.406	23.409	17.4	9.6	6.5	1.3
2016	1917.2	356.958	190.595	134.055	32.308	18.6	9.9	7	1.7
2017	1998.3	469.202	255.327	170.064	43.811	23.5	12.8	8.5	2.2
2018	3654.4	500.413	264.392	187.77	48.251	13.7	7.2	5.1	1.3
2019	3857.5	534.244	285.792	187.368	61.084	13.8	7.4	4.9	1.6
2020	3995.2	595.667	321.762	211.052	62.853	14.9	8.1	5.3	1.6
2021	4128.1	742.517	408.453	266.524	67.54	18.0	9.9	6.5	1.6
Average	**2567.25**	**437.382**	**239.984**	**157.517**	**39.881**	-	-	-	-
standard deviation	**1197.328**	**157.477**	**82.39**	**56.8**	**19.35**	-	-	-	-
Coefficient of variation	**0.466**	**0.36**	**0.34**	**0.36**	**0.49**	-	-	-	-

Source: 1- Collected and calculated from the Central Agency for Public Mobilization and Statistics, Statistical Yearbook, Annual Bulletin of Agricultural Income Estimates.

2- Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Bulletin of Agricultural Income Estimates.

$$\mathbf{Y= -548.93 + 12.99X}$$
$$(-0.94)^{N.S} \quad (5.63)^{**}$$

By analyzing simple linear regression, the significance of the model is revealed at a significance level of 1%, where the value of F was about 31.67. This was shown from the equation that an increase of one unit in the value of plant production leads to an increase in the value of the gross domestic product by 12.99 billion pounds. The value of the coefficient of determination of about 0.798 indicates that about 79.8% of the changes in the value of the gross domestic product are reflected in the value of plant production, and that about 20.2% of the changes in the value of the gross domestic product are reflected by factors that were not mentioned.

While the annual average value of the total plant production was About 239.984 billion pounds, which ranged from aminimum amounting to about 160.802 billion pounds in 2012, contributing about 17.6% of the GDP, and amaximum amounting to about 408.453 billion pounds in 2021, representing about 9.9% of the GDP. This has been shown from the table data that the lowest Acontribution amounting to about 264.392 billion pounds, representing about 7.2% of the gross domestic product in 2018.

$$\mathbf{Y= -476.16 + 19.32X}$$
$$(-0.96)^{N.S} \quad (6.48)^{**}$$

By analyzing the simple linear decline, the morale of the model at a moral level was 1%, as the value of F amounted to about 42.05, and it was found from the equation that by increasing one unit of the value of animal production that leads to an increase in the value of the gross domestic product by 19.32 billion pounds. The value of the specification laboratory is about 0.840 that

about 84.0% of the changes in the value of the gross domestic product is reflected in the value of animal production and that about 16.0% of the changes in the value of the gross domestic product reflected by not mentioned factors.

While the annual average of the value of the total animal production reached about 157.517 billion pounds, which ranged from a minimum level of about 88.970 billion pounds in 2012 to contribute about 9.7% of the gross domestic product and a maximum limit of about 266.524 billion pounds in 2021 to represent about 6.5% of the gross domestic product, It was found from the schedule data that the lowest contribution of about 187.368 billion pounds, representing about 4.9% of the gross domestic product in 2019.

$$\mathbf{Y= 230.62+ 58.59X}$$
$$(0.75)^{N.S} \quad (8.34)^{**}$$

By analyzing the simple linear decline, the morale of the model at a moral level was 1%, as the value of F amounted to about 69.51, and it was found from the equation that by increasing one unit of the value of fish production that leads to an increase in the value of the gross domestic product by 58.59 billion pounds. The value of the specification laborator is about 0.897 that about 89.7% of the changes in the value of the gross domestic product is reflected in the value of fish production and that about 10.3% of the changes in the value of the gross domestic product reflected by not mentioned factors.

The annual average of the value of the total fish production reached about 39.881 billion pounds, which ranged from aminimum level of about 17.652 billion pounds in 2012 to contribute about 1.9% of the gross domestic product and amaximum limit of about 67.540 billion pounds in 2021 to represent about 1.6% of the gross domestic product This has been shown that the slightest contribution of about 19.626 billion pounds, representing about 1.2% of the gross domestic product in 2013, and limited to the contribution of about 43.811 billion pounds, representing about 2.2% of the gross domestic product in 2017.

Second: The development of the total value of agricultural production, the value of plant production, the value of animal production, and the value of fish production in the Arab Republic of Egypt during the period from (2012-2021).

Studying the data in Table (2) shows that the value of plant production during the study period (2012-2021) ranged between aminimum of about 160.802 billion pounds in 2012, which represents about 60.1% of the value of Egyptian agricultural production, and amaximum of about 408.453 billion pounds. In 2021, it represents about 55% of the value of agricultural production, with an annual average estimated at about 239.984 billion pounds, with acoefficient of variation estimated at about 0.34%, which reflects the relative stability of plant production values during the study period .

By studying the general time trend equation (2) for the value of plant production in Table (3) It was found that the value of plant production took ageneral increasing trend during the study period, with an annual increase estimated at about 25.62 billion pounds, equivalent to about 10.68% of its annual average. The significance of this increase was confirmed statistically at asignificance level of 1%. The value of the coefficient of determination was about 0.887, which indicates that about 88.7% of the changes in plant production values are due to factors whose effect reflects the time factor.

It was also found that the value of livestock production during the study period ranged between aminimum of about 88.970 billion pounds in 2012, which represents about 33.3% of the value of Egyptian agricultural production, and amaximum of about 266.524 billion pounds in 2021, representing about 35.9% of the value of agricultural production on average. Annually, it was estimated at about 157.517 billion pounds, with acoefficient of variation estimated at about 0.36%, which reflects the relative stability of the values of animal production

By studying the general time trend equation (3) for the value of animal production in Table (3), it was found that the value of animal production has taken ageneral increasing trend, with an annual increase estimated at About 18.23 billion pounds, equivalent to about 11.57% of its annual average, and the significance of this increase was confirmed statistically at asignificance level of 1%. The value of the coefficient of determination was about 0.944, which indicates that about 94.4% of the changes in animal production values are due to factors whose effect reflects the time factor.

It was also shown that the value of fish production ranged between aminimum of about 17.652 billion pounds in 2012, which represents about 6.6% of the value of Egyptian agricultural production, and amaximum of about 67.540 billion pounds in 2021, which represents about 9.1% of the value of agricultural production with an annual average of About 39.881 billion pounds, with acoefficient of variation estimated at about 0.49%, which reflects the relative stability of fish production values during the study period.

Table (2) Development of the total value of agricultural production, the value of plant production, the value of animal production, and the value of fish production in the Arab Republic of Egypt during the period from (2012-2021).

Year	Agricultural production value	Value of plant production	Percentage of agricultural production	Value of animal production	Percentage of agricultural production	Value of Fish production	Percentage of agricultural production
	billion EGP	billion EGP		billion EGP		billion EGP	
2012	267.424	160.802	60.1	88.970	33.3	17.652	6.6
2013	282.435	165.028	58.4	97.781	34.6	19.626	6.9
2014	305.414	170.953	56.0	112.181	36.7	22.280	7.3
2015	319.549	176.734	55.3	119.406	37.4	23.409	7.3
2016	356.958	190.595	53.4	134.055	37.6	32.308	9.1
2017	469.202	255.327	54.4	170.064	36.2	43.811	9.3
2018	500.413	264.392	52.8	187.770	37.5	48.251	9.6
2019	534.244	285.792	53.5	187.368	35.1	61.084	11.4
2020	595.667	321.762	54.0	211.052	35.4	62.853	10.6
2021	742.517	408.453	55.0	266.524	35.9	67.540	9.1
Average	**437.382**	**239.984**	**-**	**157.517**	**-**	**39.881**	**-**
standard deviation	**157.48**	**82.39**	**-**	**56.80**	**-**	**19.35**	**-**
Coefficient of variation	**0.36**	**0.34**	**-**	**0.36**	**-**	**0.49**	**-**

Source: 1-Compiled and calculated by the Central Agency for Public Mobilization and Statistics, Statistical Yearbook, Annual Publication of Agricultural Income Estimates.
2-Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Income Estimates.

The general time trend equation (4) for the value of fish production in Table (3) indicates that the value of fish production has taken ageneral increasing trend during During the study period, an annual increase was estimated at about 6.25 billion pounds, equivalent to about 15.67% of its annual average. The significance of this increase was confirmed statistically at asignificance level of 1%. The value of the coefficient of determination was about 0.957, which indicates that about 95.7% of the changes in fish production values are due to factors whose effect reflects the time factor.

Table (3) General time trend equations for the development of the total value of agricultural production, the value of plant production, the value of animal production, and the value of fish production in the Arab Republic of Egypt during the period from (2012-2021).

Equation Number	variable	Equation	R2	F	Average	annual rate of change
1	**Agricultural production value**	$\hat{Y}_t = 161.80 + 50.11X_t$ $(10.16)^{**}$ $(5.29)^{**}$	0.928	$(103.12)^{**}$	437.382	11.46
2	**Value of plant production**	$\hat{Y}_t = 99.05 + 25.62\ X_t$ $(7.91)^{**}$ $(4.93)^{**}$	0.887	$(62.57)^{**}$	239.984	10.68
3	**Value of animal production**	$\hat{Y}_t = 57.25 + 18.23X_t$ $(11.63)^{**}$ $(5.89)^{**}$	0.944	$(135.33)^{**}$	157.517	11.57
4	**Value of Fish production**	$\hat{Y}_t = 5.49 + 6.25\ X_t$ $(1.89)^{N.S}$ $(13.31)^{**}$	0.957	$(177.16)^{**}$	39.881	15.67

Source: Calculated from table(2).

Third: The development of the total value of plant production and the value of field crops, vegetable crops, fruit crops, and medicinal and aromatic plants during the period (2012-2021).

Studying the data in Table (4) shows that the value of field crop production during the study period (2012-2021) ranged between aminimum of about 104.653 billion pounds in 2012, representing about 65.1% of the value of Egyptian plant production, and amaximum of about 245.845 billion pounds in the year. 2021, representing about 60.2% of the value of plant production, with an annual average estimated at about 151.950 billion pounds, with acoefficient of variation estimated at about 0.32%, which reflects the relative stability of field crop production values during the study period.

The general time trend equation (1) indicates the value of field crop production In Table (5), the value of field crop production has taken ageneral increasing trend, with an annual increase estimated at about 15.15 billion pounds, equivalent to about 9.97% of its annual average. The significance of this increase has been confirmed statistically at asignificance level of 1%. The value of the coefficient of determination was about 0.896, which indicates that about 89.6% of the changes in field crop production values are due to factors whose effect reflects the time factor.

Table (4) The total value of plant production and the value of field crops, vegetable crops, fruit crops, and medicinal and aromatic plants during the period (2012-2021).

Year	Value of field crops	Percentage of value of plant production	Greens (greens, nurseries and aims)	Percentage of value of plant production	Fruit (balm palm, fruity tree and palm)	Percentage of value of plant production	Medicinal and aromatic plants, ornamental plants, flowers and nurseries	Percentage of value of plant production	Total value of plant production
	billion EGP		billion EGP		billion EGP		billion EGP		billion EGP
2012	104.653	65.1	30.038	18.7	25.511	15.9	0.6	0.4	160.802
2013	107.772	65.3	30.628	18.6	26.129	15.8	0.499	0.3	165.028
2014	109.892	64.3	31.762	18.6	28.691	16.8	0.607	0.4	170.953
2015	110.916	62.8	33.546	19	31.632	17.9	0.641	0.4	176.734
2016	121.514	63.8	33.138	17.4	35.121	18.4	0.822	0.4	190.595
2017	164.58	64.5	41.045	16.1	48.283	18.9	1.418	0.6	255.327
2018	169.921	64.3	43.439	16.4	49.391	18.7	1.64	0.6	264.392
2019	189.36	66.3	45.69	16	48.746	17.1	1.996	0.7	285.792
2020	195.047	60.6	63.931	19.9	60.668	18.9	2.115	0.7	321.762
2021	245.845	60.2	84.803	20.8	75.306	18.4	2.499	0.6	408.453
Average	151.95	-	43.802	-	42.948	-	1.284	-	239.984
standard deviation	48.446	-	17.715	-	16.479	-	0.744	-	82.39
Coefficient of variation	0.32	-	0.4	-	0.38	-	0.58	-	0.34

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Income Estimates.

By studying the value of vegetable crop production, it was found that it ranged between aminimum of about 30.038 billion pounds in 2012, representing about 18.7% of the value of Egyptian plant production, and amaximum of about 84.803 billion pounds in 2021, representing about 20.8% of the value of plant production, on an annual average. It was estimated at about 43.802 billion pounds, with acoefficient of variation estimated at about 0.40%, which reflects the relative stability of the production values of vegetable crops during the study period.

By studying the general time trend equation (2) for the value of vegetable crop production in Table (5), it was found that the value of vegetable crop production took There is an increasing general trend with an annual increase estimated at about 5.05 billion pounds, equivalent to about 11.53% of its annual average. The significance of this increase has been confirmed statistically

at asignificance level of 1%. The value of the coefficient of determination was about 0.745, which indicates that about 74.5% of the changes in the production values of vegetable crops are due to factors whose effect reflects the time factor.

Table (5) General time trend equations for the development of the total value of agricultural production, the value of plant production, the value of animal production, and the value of fish production in the Arab Republic of Egypt during the period from (2012-2021).

Equation Number	variable	Equation	R2	F	Average	annual rate of change
1	Value of field crop production	$\hat{Y}_t = 68.65 + 15.15X_t$ $(8.30)^{**}$ $(6.06)^{**}$	0.896	$(68.88)^{**}$	151.95	9.97
2	Vegetable Production Value	$\hat{Y}_t = 16.03 + 5.05\ X_t$ $(4.83)^{**}$ $(2.47)^{*}$	0.745	$(23.36)^{**}$	43.802	11.53
3	Fruit Production Value	$\hat{Y}_t = 14.39 + 5.19X_t$ $(8.98)^{**}$ $(4.01)^{**}$	0.91	$(80.72)^{**}$	42.948	12.08
4	The production value of medicinal and aromatic plants	$\hat{Y}_t = -0.014 + 0.24\ X_t$ $(-0.10)^{N.S}$ $(9.68)^{**}$	0.921	$(93.64)^{**}$	1.284	18.69

Source: Calculated from table (4).

It was also shown that the value of fruit crop production ranged between aminimum of about 25.511 billion pounds in 2012, representing about 15.9% of the value of Egyptian plant production, and amaximum of about 75.306 billion pounds in 2021, representing about 18.4% of the value of plant production, on an annual average. It was estimated at approximately 42.948 billion pounds, with acoefficient of variation estimated at approximately 0.38%, which reflects the relative stability of the production values of fruit crops during the study period.

The general time trend equation (3) for the value of fruit crop production in Table (5) indicates that the value of fruit crop production has taken atrend An increasing year with an annual increase estimated at about 5.19 billion pounds, equivalent to about 12.08% of its annual average. The significance of this increase was confirmed statistically at asignificance level of 1%. The value of the coefficient of determination was about 0.910, which indicates that about 91.0% of the changes in fruit crop production values are due to factors whose effect reflects the time factor.

It also became clear that the value of the production of medicinal and aromatic plant crops ranged between aminimum of about 0.499 billion pounds in 2013, representing about 0.3% of the value of Egyptian plant production, and amaximum of about 2.499 billion pounds in 2021, representing about 0.6% of the value of plant production. With an annual average estimated at about 1.284 billion pounds, with acoefficient of variation estimated at about 0.58%, which reflects the relative instability of the production values of medicinal and aromatic plant crops.

By studying the general time trend equation (4) for the production value of medicinal and aromatic plant crops in Table (5), it was found that the production value Medicinal and aromatic plant crops took ageneral increasing trend during the study period, with an annual increase estimated at about 0.24 billion pounds, equivalent to about 18.69% of their annual average. The significance of this increase was confirmed statistically at asignificance level of 1%. The value of the coefficient of determination was about 0.921, which indicates that about 92.1% of the changes in the production values of medicinal and aromatic plant crops are due to factors whose effect reflects the time factor.

Fourth: Development of the total value of field crop production in the three agricultural cycles during the period (2012-2021).

Studying the data in Table (6) shows that the value of field crop production for the winter season during the study period (2012-2021) ranged between aminimum of about 57.681 billion pounds in 2012, representing about 55.1% of the total value of Egyptian field crop production, and amaximum of About 139.381 billion pounds in 2021, representing about 56.7% of the total value of field crop production, with an annual average estimated at about 86.153 billion pounds, with acoefficient of variation estimated at about 0.33%, which reflects the relative stability of the production values of winter field crops.

By studying the general time trend equation (1) The value of winter field crop production in Table (7) shows that the value of winter field crop production has taken ageneral increasing trend with an annual increase estimated at about 8.83 billion pounds, equivalent to about 10.25% of its annual average. The significance of this increase has been confirmed statistically at asignificance level of 1% The value of the coefficient of determination was about 0.907, which indicates that about 90.7% of the changes in the production values of winter field crops are due to factors whose effect reflects the time factor.

Table (6) The total value of field crop production in the three agricultural cycles during the period (2012-2021).

Year	Value of field crop production for winter lottery	% of total production value of field crops	Value of field crop production for summer lottery	% of total production value of field crops	Value of Nile Nursery Field Crop Production	% of total production value of field crops	Total value of field crop production
	billion EGP		billion EGP		billion EGP		billion EGP
2012	57.681	55.1	44.627	42.6	2.345	2.2	104.653
2013	60.455	56.1	45.139	41.9	2.178	2.0	107.772
2014	61.481	55.9	46.238	42.1	2.174	2.0	109.892
2015	64.85	58.5	44.058	39.7	2.009	1.8	110.916
2016	66.747	54.9	52.81	43.5	1.958	1.6	121.514
2017	90.599	55	71.075	43.2	2.906	1.8	164.580
2018	100.987	59.4	65.766	38.7	3.168	1.9	169.921
2019	107.55	56.8	78.912	41.7	2.897	1.5	189.360
2020	111.798	57.3	80.798	41.4	2.452	1.3	195.047
2021	139.381	56.7	102.32	41.6	4.144	1.7	245.845
Average	**86.153**	-	**63.174**	-	**2.623**	-	151.95
standard deviation	**28.085**	-	**19.969**	-	**0.674**	-	48.446
Coefficient of variation	**0.33**	-	**0.32**	-	**0.26**	-	0.32

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Income Estimates.

It was also shown that the value of field crop production for the summer season ranged between aminimum of about 44.627 billion pounds in 2012, representing about 42.6% of the total value of Egyptian field crop production, and amaximum of about 102.320 billion pounds in 2021, representing about 41.6% of the total value. Production of field crops, with an annual average estimated at about 63.174 billion pounds, with acoefficient of variation estimated at about 0.32%, which reflects the relative stability of the production values of summer field crops during the study period.

By studying the general time trend equation (2) for the value of summer field crop production in Table (7) It was found that the value of summer field crop production has taken ageneral increasing trend, with an annual increase estimated at about 6.16 billion pounds, equivalent to about 9.75% of its annual average. The significance of this increase was confirmed statistically at asignificance level of 1%. The value of the coefficient of determination was about 0.871, which indicates that about 87.1% of the changes in summer field crop production values are due to factors whose effect reflects the time factor.

It also became clear that the value of field crop production for the Nile River during the study period ranged between aminimum of about 1.958 billion pounds in 2016, representing about 1.6% of the total value of Egyptian field crop production, and amaximum of about 4.144 billion pounds in 2021, representing about 1.7% of The total value of field crop production, with an annual average estimated at approximately 2.623 billion pounds, with acoefficient of variation estimated at approximately 0.26%, which reflects the relative stability of the production values of Nile field crops.

By examining the general time trend equation (3) for the value of Nile field crop production in Table (7), it is revealed The value of Nile field crop production has taken ageneral increasing trend, with an annual increase estimated at about 0.16 billion pounds, equivalent to about 6.1% of its annual average. The significance of this increase has been confirmed statistically at asignificance level of 1%. The value of the coefficient of determination was about 0.506, which indicates that about 50.6% of the changes in the production values of Nile field crops are due to factors whose effect reflects the time factor.

Table (7) General time trend equations for the development of the total value of production of winter field crops, the total value of summer field crops, and the total value of Nile field crops in the Arab Republic of Egypt during the period from (2012-2021).

Equation Number	variable	Equation	R2	F	Average	annual rate of change
1	Total winter field crop production value	$\hat{Y}_t = 37.58 + 8.83X_t$ $(8.81)^{**}$ $(6.04)^{**}$	0.907	$^{**}(77.64)$	86.153	10.25
2	Total value of summer field crop production	$\hat{Y}_t = 29.32 + 6.16\ X_t$ $(7.35)^{**}$ $(5.64)^{**}$	0.871	$(53.99)^{**}$	63.174	9.75
3	Total Nile Field Crop Production Value	$\hat{Y}_t = 1.75 + 0.16X_t$ $(2.87)^{**}$ $(5.10)^{**}$	0.506	$(8.21)^{**}$	2.623	6.1

Source: Calculated from table(6).

RECOMMENDATIONS

1- Expansion of fish production as one of the most important components of agricultural production, the value of which positively affects the value of the gross domestic product, as it became clear from the results that a single increase in the value of fish production leads to an increase in the value of the gross domestic production by about 58.59 billion pounds.

2- The necessity of expanding agriculture Field crops, as they are the highest components of plant production, contribute to the value of the gross domestic product, and are also the highest in domestic consumption.

3- Expanding the cultivation of fruit crops and directing them towards foreign markets for their export status due to their positive role in increasing the value of the gross domestic product.

4- The necessity of expanding the production of medicinal and aromatic plants and identifying their most important production problems that hinder farmers from producing them, which negatively affects their role in the value of the gross domestic product.

REFERENCES

1. Central Agency for Public Mobilization and Statistics, Annual Statistical Book, Annual Bulletin of Agricultural Income Estimates, Bulletin of National Accounts.
2. Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Income Estimates Bulletin.
3. Rabab Ahmed Mahmoud Al-Khatib, "An Analytical Economic Study of Agricultural Income in Egypt," Egyptian Journal of Agricultural Economics, Volume (27), Issue (4), December 2017.
4. Abdel-Wakil Ibrahim Mohamed, Jalal Abdel-Fattah Al-Saghir, Yasser Abdel Hamid Abdel-Radhi and Hamada Hamdoun Ahmed, 'An economic vision of the components of Egyptian agricultural income', Assiut J. Agric. Sci., 50 (3) 2019 (259-270).