

An Economic Study of the Most Important Varieties of Wheat Crop in Kafr El-Sheikh Governorate, Egypt

Gaber A. B. Shehata

Faculty of Agriculture (Saba Basha), Alexandria University

Abdel-Sattar Al-Tarawi

Agricultural Economics Research Institute
Agricultural Research Center, Egypt

Mohamed Al-Damiri

Agricultural Economics Research Institute
Agricultural Research Center, Egypt

ABSTRACT

The agricultural sector represents an important place in the national economy, as it contributes about LE 438.73 billion, representing about 11.31% of the national income, which amounted to about LE 3879.42 billion in 2020, and the cultivated area of the wheat crop in Egypt reached 3.13 million feddans, while the cultivated area in Kafr El-Sheikh Governorate amounted to about 217.11 thousand feddans in 2019. The research problem is represented in the food production of the wheat crop that does not meet the food consumption needs of it as a result of the steady increase in the population, which led to the emergence of a food gap that is covered by importing from abroad. The research aims to shed light on some economic indicators for the production of wheat crop in Kafr El-Sheikh Governorate and to estimate the economic efficiency of the production elements used, by relying on the method of descriptive and quantitative analysis of data using standard analytical methods, and the research relied on two types of published and unpublished secondary data in addition to primary data for a sample. A field survey was collected using a research questionnaire specially prepared for this purpose, with a personal interview from a multi-stage random sample of wheat growers in Kafr El-Sheikh Governorate, and with regard to the productive situation of the most important varieties of wheat crop in Egypt and Kafr El-Sheikh, the most important results were as follows: The average area of wheat in Egypt during the period (2005-2019) was about 3.02 million feddans, and the average feddan productivity of wheat in Egypt during the period (2005-2019) was about 18.29 ardeb/ feddan, and the average total production was about 55.21 million ardeb Which is equivalent to about 8.142 million tons, while the average cultivated area in Kafr El-Sheikh Governorate during the same period was about 230.43 thousand feddans. With an average relative importance of the cultivated area of wheat in Kafr El-Sheikh Governorate compared to the cultivated area of it in Egypt, it turned out that it amounted to about 7.67%, and it was found that the average productivity per feddan of wheat in Kafr El-Sheikh during the period (2005-2019) amounted to about 15.51 ardeb/ feddan, and the average of total production is about 3.58 million ardebs, which is equivalent to about 537 million tons. By studying the average relative importance of the total

production of wheat in Kafr El-Sheikh Governorate compared to the total production of wheat in Egypt, it was found that it amounted to about 6.35%. It is also clear that the value of the cost of production inputs, as well as the relative importance of each of them to the total costs of wheat varieties (Misr 1, Misr 2, Giza 171) in question, where the average total costs of them amounted to about LE 12,820, 12.04 and 10.55 thousand/ feddan for each of them, respectively, and the average of the fixed costs are about LE 5.6, 4.78, and 5.69 thousand / feddan for each of them, respectively, representing about 43.77%, 39.7% and 53.9% of the average total costs, and the average public expenses amounted to about LE 40.76, 90.19 and 75.32 / feddan, representing about 0.32 %, 0.75%, 0.71% of each, respectively, of the average total total costs. The production functions were estimated in the logarithmic form, and they gave the best results in order to estimate the economic efficiency used in the production of wheat varieties, thus activating the positive factors and discouraging negative factors to reach a better use of the productive resources used in the production of this crop. The cubic model was chosen, and the optimum and maximal size of the profits were estimated for each of the wheat varieties, Misr 1, Misr 2, and Giza 171, while the variable costs amounted to about LE 7.2, 7.26 and 4.86 thousand/ feddan for each of them, respectively. The economic indicators for the production of the most important varieties of wheat grown in Kafr El-Sheikh Governorate were studied, which are the varieties of Misr 1, Misr 2, and Giza 171. The problems faced by wheat farmers in the research sample were also studied, and the opinions of farmers in these problems were studied.

Keywords: Economic indicators, economic efficiency, wheat varieties, food gap.

INTRODUCTION

Wheat crop is one of the most important grain crops, to which the state pays special attention to improving its productivity. Wheat represents an important position in the Egyptian food security strategy, especially in light of the recent fluctuation of its prices globally, as well as its use in biofuel production for some countries, including the U.S.A and Brazil, which it may be reflected in the global supply of it, and despite the increase in wheat production in Egypt in recent years, this increase was offset by an increase in the wheat import bill as a result of the steady increase in the population and then local consumption, and food grain crops play an important role in agricultural foreign trade, at the time Wheat is one of the most important Egyptian agricultural imports.

The agricultural sector has an important place in the Egyptian national economy, as it contributes about LE 438.73 billion, representing about 11.31% of the national income, which amounts to about LE 3879.42 billion in 2020, and agriculture plays an important role in the process of social development, providing food and clothing needs, in addition to providing foreign exchange necessary for the development process. This is through agricultural exports amounting to about LE 92.165 billion, representing about 17.83% of the national exports, amounting to about LE 517.017 billion in 2019. The agricultural sector is also considered one of the important sectors that absorb the labor force, as the volume of employment in the agricultural sector is about 55.09 million workers, representing about 21.1 % of the total workforce. year 2019, The area planted for the wheat crop in the Republic amounted to 3.13 million feddans, while the cultivated area in Kafr El-Sheikh Governorate amounted to about 217.11 thousand feddans in 2019.

Research Problem

Wheat crop production in Egypt does not meet wheat consumption needs of it as a result of the steady increase in the population, which led to the emergence of a food gap that is covered by import from abroad, and there are some traditional production methods that affect the use of human and land agricultural resources, which has from a bad impact on directing agricultural resources towards their best uses in light of the limited availability of these resources, which results in crops with low yield per feddan.

Research Objective

The research aimed to shed light on some economic indicators for the production of the wheat crop in Kafr El-Sheikh governorate and to estimate the economic efficiency of the production elements used in its productivity and thus activate the positive factors and discourage negative factors to reach a better use of the productive resources used in the production of this crop and thus increase the feddan productivity of it as well as standing On the most important problems faced by farmers of different wheat varieties.

Research Methodology and Source of Data

The research relied on the method of descriptive and quantitative analysis of the data using standard analytical methods such as the equations of the general time trend to find out its direction in addition to studying the economic indicators for the production of wheat crop, as well as the standard estimation of the production functions of the most important varieties of wheat crop in Kafr El-Sheikh Governorate in order to determine the efficiency of using resources, as well as the statistical estimation of the production costs functions of the wheat crop varieties in the governorate. The research relied on two types of data, the first: published and unpublished secondary data, which were obtained from different sources, in addition to preliminary data for a field sample that was collected using a questionnaire form specially prepared for this purpose in the personal interview of a multi-stage random sample of wheat producers in Kafr El-Sheikh Governorate.

RESEARCH RESULTS AND DISCUSSION

The productive situation of the wheat crop in Egypt and Kafr El-Sheikh Governorate

The current productive situation of the wheat crop in Egypt

Development of the cultivated area: Table No. (1) indicates the fluctuation of the cultivated area with wheat in Egypt during the period (2005-2019) between a minimum of about 2.22 million feddans in 2007 with an index number of about 89.88% compared to the base year (2005), and a maximum of about 3.47 million feddans in 2015 with a record number of 140.39% compared to the base year, with an average of about 3.02 million feddans with a standard deviation of about 362.60 thousand feddans and a coefficient of variation estimated at about 12%. By estimating the equation of the general time trend of the wheat cultivated area, the linear picture shows that it has taken a general, upward and statistically significant trend at the level of significance 1% with an increase of about 560 feddans, as it is clear from the value of the coefficient of determination (R^2) that about 43.4% of the changes in the area are due to the factors whose impact reflects the time element, table No. (2) Equation No. (1).

Table (1): Development of productivity indicators of wheat crop in Egypt during the period (2005-2019)

Year	Cultivated area		Fed. productivity		Total production	
	10 ⁶ fed.	Index nu.	Ardeb	Index nu.	10 ⁶ fed.	Index nu.
2005	2.47	100.00	18.93	100.00	46.78	100.00
2006	2.54	102.71	18.64	98.47	47.30	101.12
2007	2.22	89.88	18.81	99.37	41.78	89.31
2008	2.92	118.17	18.21	96.20	53.18	113.69
2009	3.15	127.36	18.06	95.40	56.82	121.47
2010	3.00	121.45	15.92	84.10	47.79	102.17
2011	3.05	123.39	18.3	96.67	55.80	119.30
2012	3.16	127.92	18.55	97.99	58.64	125.35
2013	3.38	136.71	18.67	98.63	63.07	134.83
2014	3.39	137.31	18.23	96.30	61.87	132.26
2015	3.47	140.39	18.46	97.52	64.04	136.89
2016	3.35	135.70	18.57	98.12	62.28	133.15
2017	2.92	118.24	19.21	101.51	56.14	120.02
2018	3.16	127.76	17.63	93.14	55.66	118.98
2019	3.13	126.87	18.2	96.14	57.06	121.98
Average	3.02	121.36	18.29	96.55	55.21	117.18
Min. lim.	2.22	89.88	15.92	84.10	41.78	89.31
Max. lim.	3.47	140.39	19.21	101.51	64.04	136.89
Standard diviation	0.36261		0.76		6.69	
C.V	12.00		4.16		12.11	

- Feddan = 0.42 hectare wheat ardeb = 150 Kilogram

Source: Compiled and calculated from Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Central Administration of Agricultural Economy, Agricultural Statistics Bulletin, various issues.

Development of feddan productivity: by reviewing the data of Table No. (1), it was found that the average feddan productivity of wheat in Egypt during the period (2005-2019) amounted to about 18.29 ardeb/feddan, with a standard deviation of about 0.76 ardeb/feddan, and a coefficient of variation estimated at about 4.16%. The feddan productivity ranged between a minimum of about 15.92 ardebs/feddan in 2010 with an index number of 84.1% compared to the base year, and a maximum of about 19.21 ardebs/feddan with an index number of about 101.51% compared to 2005. By estimating the equation of the general time trend of wheat productivity, the linear picture showed that it does not prove its significant levels during the research period, which indicates that it is almost constant or concentrated around its average during the research period. Table No. (2), Equation No. (2).

Table (2): Equations of the general time trend of the development of some productivity indicators of the wheat crop in Egypt during the period (2005-2019).

No.	Depend variable	Equation	Average	R ²	F _c	b	Rate of change %
1	Area	$Y = 2.57 + 0.056 X$ (17.36) ** (3.42) **	3.02	0.434	**11.72	0.056	1.854
2	Productivity	$Y = 18.34 - 0.006 X$ (42.80) ** (-0.012)	18.29	0.001	0.014	-	-
3	Production	$Y = 47.002 + 1.026 X$ (17.13) ** (3.40) **	55.21	0.471	**11.57	1.026	1.858

Source: Collected and calculated from data of Table (1).

Development of total production: Table No. (1) indicates that the total production of wheat in Egypt fluctuated between a minimum of about 41.8 million ardebs in 2007, an index number of about 89.31% compared to the base year (2005), and a maximum of about 64.04 million ardebs. ardeb in 2015 with an index number of about 136.89%, with an average of about 55.21 million ardebs, with a standard deviation of about 14.3 million ardebs and a coefficient of variation estimated at about 12.2%. By estimating the equation of the general time trend of the total production of wheat the linear picture shows that it has taken a general, upward and statistically significant trend at the level of significance 1% with an increase of about 1.026 million ardebs, which represents about 1.858% of the annual average during the research period. It is also evident from the value of the coefficient of determination (R²) that about 47.1% of the changes in total production are due to factors whose impact reflects the time element, Table No. (2), Equation No. (3).

THE CURRENT PRODUCTIVE SITUATION OF WHEAT CROP IN KAFR EL-SHEIKH GOVERNORATE DURING THE PERIOD (2005-2019)

Development of the cultivated area

Table No. (3) indicates the fluctuation of the cultivated area of wheat in Kafr El-Sheikh during the period (2005-2019) between a minimum of about 201.69 thousand feddans in 2007 with an index number of about 98.29% compared to the base year (2005). And a maximum limit of about 261.82 million feddans in 2009 with a record number of 124.78% compared to the base year, with an average of about 230.43 thousand feddans with a standard deviation of about 15.85 thousand feddans and a coefficient of variation estimated at about 6.88%. By estimating the equation of the general time trend of wheat cultivated area in Kafr El-Sheikh Governorate, the linear picture showed that it does not prove its significant levels during the research period, which indicates that it is almost constant or concentrated around its average during the research period. Table No. (4), Equation No. (1).

By studying the average relative importance of the cultivated area of wheat in Kafr El-Sheikh Governorate compared to the cultivated area in Egypt, it was found that it amounted to about 7.67% and ranged between a minimum of about 6.68% and a maximum of about 9.08% during the research period.

Development of feddan productivity

By reviewing the data of Table No. (3), it was found that the average feddan productivity of wheat in Kafr El-Sheikh during the period (2005-2019) amounted to about 15.51 ardeb/feddan, with a standard deviation of about 3.19 ardeb/feddan, and coefficient of variation estimated at about 20.55%. The feddan productivity ranged between a minimum of about 8.03 ardebs/feddans in 2006 with an index number of 62.50% compared to the base year, and a maximum of about 18.19 ardebs /feddans in 2017 with an index number of about 141.06% compared to 2005. By estimating the equation of the general time trend of productivity development of wheat in Kafr El-Sheikh the linear picture shows that it has taken a general, upward and statistically significant trend at the level of significance 1% with an increase of about 0.535 ardebs / feddan, which represents about 3.45% of the annual average during the research period. It is also evident from the value of the coefficient of determination (R^2) that about 56.4% of the changes in feddan productivity are due to factors whose impact reflects the element of time. Table No. (4) Equation No. (2)

Table (3): Development of productivity indicators of wheat crop in Kafr El-Sheikh Governorate during the period (2005-2019)

Year	Cultivated area			Feddan productivity		Total production		
	10 ³ Fed.	Index nu.	%	Ardeb	Index nu.	10 ³ Fed.	Index nu.	%
2005	209.83	100.00	8.49	12.85	100.00	2695.58	100.00	5.76
2006	229.15	109.21	9.03	8.03	62.50	1839.97	68.26	3.89
2007	201.69	96.12	9.08	12.59	97.98	2538.54	94.17	6.08
2008	233.70	111.37	8.00	11.86	92.31	2771.39	102.81	5.21
2009	261.82	124.78	8.32	11.92	92.79	3120.87	115.78	5.49
2010	234.82	111.91	7.82	16.99	132.26	3989.49	148.00	8.35
2011	239.60	114.19	7.86	17.77	138.33	4257.69	157.95	7.63
2012	236.28	112.61	7.47	18.05	140.53	4265.64	158.25	7.27
2013	240.51	114.62	7.12	17.48	136.08	4204.35	155.97	6.67
2014	245.84	117.16	7.25	17.82	138.72	4380.94	162.52	7.08
2015	231.81	110.48	6.68	17.93	139.57	4156.43	154.19	6.49
2016	235.16	112.07	7.01	17.91	139.42	4211.72	156.25	6.76
2017	206.24	98.29	7.06	18.19	141.60	3751.71	139.18	6.68
2018	232.84	110.96	7.38	16.88	131.41	3930.45	145.81	7.06
2019	217.11	103.47	6.93	16.45	128.04	3571.01	132.48	6.26
Average	230.43	109.57	7.67	15.51	117.89	3579.05	129.17	6.35
Min. lim.	201.69	96.12	6.68	8.03	62.50	1839.97	68.26	3.89
Max. lim.	261.82	124.78	9.08	18.19	141.60	4380.94	162.52	8.35
Standard diviation	15.85			3.19		791.53		
C.V	6.88			20.55		22.12		

Source: Compiled and calculated from the data of the Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Central Administration of Agricultural Economy, Agricultural Statistics Bulletin, various issues.

Table (4): Equations of the general time trend of the development of some productivity indicators for the wheat crop in Kafr El-Sheikh Governorate during the period (2005-2019)

No.	Depend variable	Equation	Average	R ²	F _c	b	Rate of change %
1	Area	$Y = 229.43 + 0.124 X$ (25.69) ** (0.126)	230.43	0.001	0.016	-	-
2	Productivity	$Y = 229.43 + 0.124 X$ (9.46) ** (4.10) **	15.51	0.564	**16.816	0.535	3.45
3	Production	$Y = 2598.1 + 122.62 X$ (8.07) ** (3.46) **	3579.05	0.480	**12	122.62	3.43

Source: Collected and calculated from data of Table (3).

Development of total production

Table No. (3) indicates the fluctuation of the total production of wheat in Kafr El-Sheikh between a minimum of about 1.84 million ardebs in 2006 with an index number of about 68.26% compared to the base year (2005), and a maximum of about 4.38 One million ardebs in 2014 with an index number of about 162.52%, with an average of about 3.58 million ardebs, which is equivalent to about 537 million tons, with a standard deviation of about 791.53 thousand ardebs and a coefficient of variation estimated at about 22.12%. By estimating the equation of the general time trend of productivity development of wheat in Kafr El-Sheikh the linear picture shows that it has taken a general, upward and statistically significant trend at the level of significance 1% with an increase of about 122,632 thousand ardebs, which represents about 3.43% of the annual average during the research period. It is also evident from the value of the coefficient of determination (R²) that about 48% of the changes in total production are due to factors whose impact reflects the time element, Table No. (4), Equation No. (3).

By studying the average relative importance of the total production of wheat in Kafr El-Sheikh governorate compared to the total production of it in Egypt, it was found that it amounted to about 6.35% and ranged between a minimum of about 3.89% and a maximum of about 8.35% during the research period.

THE VARIETAL COMPOSITION OF WHEAT CROP IN EGYPT AND KAFR EL-SHEIKH GOVERNORATE DURING THE PERIOD (2014-2019)

From the data of Table No. (5), it was found that the highest area planted with wheat at the level of Egypt for the 12 sods variety amounted to about 561.8 thousand feddans, while the lowest area for the Shandawil variety amounted to about 29.5 thousand feddans, while the highest feddan productivity at the level of Egypt was for the 11 gemiza variety, which amounted to 18.9 ardeb / feddan. It is followed by the Egypt category 2, with a productivity of about 18.4 ardeb / feddan.

Table No. (5) Average of cultivated area, feddan productivity, and total production of wheat varieties grown in Egypt and Kafr El-Sheikh Governorate during the period (2014-2019)

Varieties	Cultivated area		Feddan productivity		Total production	
	Egypt	Kafr El-Sheikh	Egypt	Kafr El-Sheikh	Egypt	Kafr El-Sheikh
Giza 168	462.33	25.06	17.91	17.36	8264.53	430.99
Sakha 93	262.89	16.87	18.28	17.98	4816.18	304.56
Sakha 94	113.61	26.08	18.37	17.82	2096.28	464.69
Gmiza 9	148.76	10.33	18.91	17.45	2823.03	179.94
Sods 12	561.89	33.96	18.58	17.70	10455.61	610.47
Misir 1	558.75	73.64	18.31	17.52	10185.50	1284.85
Misir 2	189.17	32.27	18.39	17.56	3474.52	569.52
Gmiza 11	394.82	29.75	18.86	17.39	7404.90	516.61
Giza 171	163.20	13.82	17.89	17.38	2926.70	235.85
Shandawil	29.49	1.21	18.10	17.21	526.63	20.47

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

While in Kafr El-Sheikh Governorate, the wheat cultivated area reached about 22.8 thousand feddan. It was found that the highest wheat cultivated area at the governorate level was for the Misr 1 variety with an area of about 73.6 thousand feddan and the lowest for the Shandawil variety with an area of about 1.2 thousand feddans, while the highest productivity of feddan in the governorate was for the Sakha variety 93, reaching About 17.98 ardebs and the lowest for the Shandawil variety, which amounted to about 17.2 ardebs per feddan.

Research sample

The centers of Al-Hamoul and Sidi Salem were chosen as the largest centers of the governorate in terms of the cultivated area, at 100.7 and 79.7 thousand feddans for each, respectively, then two villages were randomly selected from each center, namely the villages of Al-Kafr Al-Sharqi and Al-Banna in the center of Al-Hamul and the villages of Kom Al-Dahab and Tida in the Sidi Salem Center, where 30 views were taken from farmers of the wheat crop for the varieties of Misr 1, Misr 2, Giza 171, with a total number of farmers of 90 farmers with a total of 90 views of the wheat crop, the research also relied on field data collected through a questionnaire form, in a personal interview with wheat farmers during the agricultural season 2020/2021. The age and quality of the family, the educational status and the family farm work. It also dealt with the agricultural tenure and the crop and varietal composition. The second field reviewed the material and service inputs for the various operations of the planting in question, the volume of production for the varieties of the research crop, as well as the productive problems faced by the farmers.

The following are the most important indicators of the wheat varieties in question and the relative importance of production inputs

It is clear from the data of table (6), which shows the value of the cost of production inputs, as well as the relative importance of each to the total costs of wheat varieties (Misr 1, Misr 2, Giza 171). The cost of agricultural work includes the cost of both human work, mechanical work and animal work. The cost of automated work for wheat crop varieties was estimated at about LE 2769, 3023, 1933 / feddan, representing about 21.6%, 25.15%, 18.3% of the total costs of wheat varieties Misr 1, Misr 2, Giza 171, respectively, while the cost of human labor amounted to about 1506, 1568, 1215 pounds / feddan, representing about 11.8%, 13.0%, 11.5% of the total costs of wheat varieties Misr 1, Misr 2, Giza 171, While the cost of animal work amounted to about 77, 45, and 75 pounds / feddan, representing about 0.6%, 0.4%, 0.7% of the total total costs of wheat varieties Misr 1, Misr 2, Giza 171, respectively. As for production requirements, the value of seeds reached about LE 518, 418, 412 / feddan, representing about 4%, 3.4%, 3.9% of the total costs of the three varieties, respectively, while the value of municipal fertilizer reached LE 303, 315, 115 /feddan, representing about 2.4%, 2.6, 1.1% of the total costs of the items The three, respectively.

While the value of the nitrogen fertilizer amounted to about LE 1287, 1249, 608 / feddan, representing about 10.8%, 10.4%, 5.8% of the total costs of the three categories, respectively, and the value of phosphate fertilizers amounted to about LE 280.8, 248, 239 / feddan, representing about 2.3 %, 2.9%, 2.2% of the total costs of the three varieties, respectively, and the value of the pesticides amounted to about LE 254, 288, 162 / feddan, representing about 2.0%, 2.4%, 1.5% of the total costs of the three varieties, respectively, while the value of Production requirements about LE 2843, 2620, 1638 / feddan, representing about 22.2%, 21.7%, 15.5% of the total costs of the three items, respectively

While the average of total costs for them amounted to about LE 12,820, 12.04, 10.55 thousand / feddan for the three types, respectively, and the average fixed costs were about LE 5.6, 4.78, 5.69 thousand / feddan for each of them, respectively, representing about 43.77%, 39.7%, 53.9% of The average total costs, and the average general expenses amounted to about LE 40.76, 90.19, 75.32 / feddan, representing about 0.32%, 0.75%, 0.71% for each of them, respectively, of the average total costs, while the variable costs amounted to about LE 7.2, 7.26, and 4.86 thousand / feddan for each of them, respectively, representing about 56.23%, 60.30% and 46.1% for each of them, respectively, of the average total costs.

Table No. (6)- The most important economic indicators for the production of wheat crop varieties for the research sample, LE / feddan, in Kafr El-Sheikh Governorate

Item Cost	Misr 1		Misr 2		Giza 171	
	Average	Total cost %	Average	Total cost %	Average	Total cost %
Human labor	1506.59	11.77	1568.97	13.03	1215.79	11.52
Mechanical work	2769.48	21.64	3023.11	25.12	1933.77	18.33
Animal work	77.27	0.60	45.59	0.38	75.45	0.72
Total cost of agricultural labor	4353.34	34.01	4637.67	38.53	3225.01	30.57
Seed value	517.93	4.05	418.10	3.47	412.16	3.91
Municipal fertilizer value	303.88	2.37	315.98	2.63	115.58	1.10
Nitrogenous fertilizer value	1387.02	10.84	1249.97	10.38	608.78	5.77
Phosphate fertilizer value	380.83	2.98	348.64	2.90	339.22	3.22
Pesticide value	253.99	1.98	288.13	2.39	162.86	1.54
Total value of production inputs	2843.66	22.22	2620.82	21.77	1638.60	15.53
Total value of variable costs	7197	56.23	7258.49	60.30	4863.61	46.10
Value rent	5562.44	43.46	4688.33	38.95	5610.39	53.18
Fixed costs	5603.20	43.77	4778.51	39.70	5685.71	53.90
The value of public expenses	40.76	0.32	90.19	0.75	75.32	0.71
The total value of the total costs	12800.20	100.00	12037.00	100.00	10549.32	100.00
Main output value	9197.78	139.17	10539.62	114.21	11252.21	93.75
Quantity of main product in ardeb	15	-	15.78	-	17.66	-
By-product value	3492.01	—	4356.76	—	2688.31	—
Total output value	12689.79	99.14	14896.39	123.75	13940.52	132.15
Return over variable costs	5492.79	42.91	7637.90	63.45	9076.91	86.04
Net return	110.40-	0.86-	2859.38	23.75	3391.19	32.15

Source: Collected and calculated from the results of the research sample questionnaire for the agricultural season (2020/2021)

It is clear from the previous table that the value of the feddan product amounted to about LE 12.69, 14.9, 13.94 thousand / feddan for each of them, respectively, representing about 99.14%, 123.75%, 132.15% for each of them, respectively, out of the value of the average total costs, and the return above the variable costs was about LE 5.49, 7.64, 9.08 thousand / feddan, representing about 42.91%, 63.45%, 86.04% for each of them, respectively, of the average total costs, and the net return amounted to about LE -110.4, 2859.38, 3391.19 / feddan, representing about -0.86% , 23.75%, 32.15% for each of them, respectively, of the average total total costs.

STANDARD ESTIMATION OF THE PRODUCTION FUNCTIONS OF THE MOST IMPORTANT VARIETIES OF WHEAT CROP IN KAFR EL-SHEIKH GOVERNORATE

Agricultural economists tend to use the exponential function, as it is considered the most appropriate form for the conditions of agricultural production. Estimated based on the high value of the coefficient of determination (R^2), the significance of the estimates of the independent variables based on the value of (T), the significance of the model as a whole based on the value of (F).

On the other hand, the model includes one dependent variable, which is the feddan physical output (Y), and nine independent variables represented in the number of hours of automated work hour (X_2), the number of animal work hours (X_3), human family work per man/day (X_4), human work from Women and children (X_5), the amount of municipal fertilizer in cubic meters (X_6), the amount of seeds in kilograms (X_7), the amount of nitrogen as an effective unit (X_8), the value of herbicides and fungicides in pounds (X_9), the amount of phosphorous as an effective unit (X_{10})

To estimate the productivity functions of wheat farmers and based on Klein's matrix of simple correlation coefficients between explanatory variables in the double logarithmic form, it is clear that there is no multy collenariarity between the variables, as the variables with a correlation greater than ± 0.8 should not be represented in one equation.

Standard estimation of the production functions of wheat crop, Misr 1 variety

- By reviewing the different attempts to produce wheat crop functions for Misr1 variety in Kafr El-Sheikh governorate using the (Backward) method, and based on the previously mentioned criteria in the comparison between the estimated functions, the most successful of these functions was the attempt No. (7) in Table No. (7), which came on the following model:

$$\ln Y = 1.47 - 0.18 \ln X_4 - 0.05 \ln X_5 - 0.02 \ln X_9$$

$$(11.99) ** \quad (-2.06) * \quad (-2.04) * \quad (-1.68) *$$

$$F = 3.44 * \quad R^2 = 0.28 \quad R = 0.53$$

The results of the analysis of the previous model indicate that it is statistically significant at the level of significance of 5%. It shows that the value of determination coefficient (R^2), which amounted to about 0.288, it means that 29% approximatly of the changes in the quantity of wheat crop production of the Misr 1 variety to the change in the independent variables included in the model combined, and by examining the significance the regression coefficients of the independent variables of the model showed that the regression coefficient was found to be significant for each of the human work of men (X_4) and the human work of women (X_5) at a level of significance of 5%, while the significance of the regression coefficients for the rest of the variables included in the model was not proven at any of the familiar levels of significance.

It was also found that the productivity elasticity of the human labor resource of men (X_4) amounted to about (-0.18), and since it is negative, it indicates that there is a waste in the use of this resource in the production of wheat, Misr 1 variety in Kafr El-Sheikh Governorate, meaning that its use increased by 10% over the level the current leads to a decrease in the output of the physical farm by 1.8%, as the production for this resource is in the third stage, which means that there is a waste in the use of this resource and farmers must rationalize their use of it, while the productive elasticity of the human labor resource of women (X_5) was

estimated at (-0.05), and since it is also negative, it indicates that there is a waste in the use of this resource, meaning that an increase in its use by 10% over the current level leads to a

Table No. (7) Attempts to measure the logarithmic double-production functions of wheat crop, Misr 1 variety in Kafr El-Sheikh Governorate

Model No.	Model	R	R ²	F _c
1	$\ln Y = 0.81 + 0.24 \ln x_2 + 0.01 \ln x_3 - 0.23 \ln x_4 - 0.05 \ln x_5 - 0.01 \ln x_6 + 0.14 \ln x_7 + 0.06 \ln x_8 - 0.02 \ln x_9 - 0.02 \ln x_{10}$ (0.45) (1.24-) (-1.38) (-0.54) (0.73) -1.85 (-1.77) (0.82) (1.22) (1.51)	0.56	0.43	1.69
2	$\ln Y = 0.97 + 0.20 \ln x_2 + 0.01 \ln x_3 - 0.21 \ln x_4 - 0.05 \ln x_5 - 0.01 \ln x_6 + 0.14 \ln x_7 - 0.02 \ln x_9 - 0.02 \ln x_{10}$ (-1.34) (0.75) (1.20-) -0.40 () -1.76 (-1.84) () (1.16) (0.73) (2.44)*	0.65	0.43	1.94
3	$\ln Y = 0.91 + 0.24 \ln x_2 + 0.01 \ln x_3 - 0.24 \ln x_4 + 0.05 \ln x_5 + 0.17 \ln x_6 - 0.02 \ln x_7 - 0.02 \ln x_9$ (-1.47) (-1.43) (0.95 (*) -2.06 (*) 2.39 (-) 0.99 ())1.62 () * 2.51(	0.65	0.42	2.29*
4	$\ln Y = 1.21 + 0.25 \ln x_2 + 0.01 \ln x_3 - 0.24 \ln x_4 + 0.05 \ln x_5 + 0.17 \ln x_6 - 0.02 \ln x_7 - 0.02 \ln x_9$ (-1.47) (-1.43) (0.95 (*) -2.06 (*) 2.39 (-) 0.99 ())1.62 () * 2.51(	0.63	0.40	2.53*
5	$\ln Y = 1.67 + 0.17 \ln x_2 - 0.20 \ln x_4 - 0.04 \ln x_5 - 0.02 \ln x_9 - 0.02 \ln x_{10}$ (-1.36 () -1.63) (1.83 (- *) -2.27) (1.51 (*) * 7.16(	0.57	0.33	*2.92
6	$\ln Y = 1.30 + 0.15 \ln x_2 - 0.21 \ln x_4 - 0.04 \ln x_5 - 0.02 \ln x_9$ (-1.83) (1.78 (- *) -2.83) (1.32 (*) * 7.16(	0.00	0.00	*3.09
7	$\ln Y = 1.47 - 0.18 \ln x_4 - 0.05 \ln x_5 - 0.02 \ln x_9$ (11.99) ** (-2.06) * (-2.04) * (-1.68)*	0.53	0.28	*3.44
8	$\ln Y = 1.41 - 0.16 \ln x_4 - 0.04 \ln x_5$ (11.07) ** (-1.81) (-1.78)	0.45	0.21	*3.51

Source: The results of analyzing the data of research sample on the computer for the agricultural season (2020/2021).

*: Significant at the 0.05 level **: Significant at the 0.01 . level decrease in physical agricultural output by 0.5 % as the production for this resource was in the third stage, which means that there is wastage in the use of this resource and farmers must rationalize their use of it.

On the other hand, the total productivity elasticity of this model was estimated at (-0.25), and since it is negative and less than one, it indicates that there is a waste in the use of the productive resources included in the model combined, and that an increase of these combined resources by 10% from the current level leads to a decrease in agricultural output Physiql for wheat crop, Misr 1 variety, with a percentage of 2.5%.

Standard estimation of the production functions of the wheat crop, Misr 2 variety

By reviewing the different attempts of the functions of production of wheat crop for the Misr 2 variety in Kafr El-Sheikh Governorate by the (BACKWARD) method, and based on the previously mentioned criteria in the comparison between the estimated functions, the most

successful of these functions was the attempt No. (5) in Table No. (8), which came on the following model:

$$\ln Y = 1.22 - 0.05 \ln X_2 + 0.06 \ln X_4 - 0.02 \ln X_5 - 0.02 \ln X_6 - 0.03 \ln X_7$$

$$(22.86)^{**} \quad (-2.54)^{*} \quad (1.59) \quad (-3.36)^{**} \quad (-3.11)^{**} \quad (-2.47)^{*}$$

$$F = 4.81^{**} \quad R^2 = 0.50 \quad R = 0.71$$

The results of the analysis of the previous model indicate that it is statistically significant at the level of significance of 1%. It shows the value of determination coefficient (R^2), which amounted to about 0.5, and it means that about 50% of the changes in the quantity of wheat crop production of the Misr 2 variety to the change in the independent variables included in the model combined, and by examining the significance the regression coefficients of the independent variables in the model show that the regression coefficient is significant for each of the suppliers of the number of automated work hours per hour (X_2), human work of women and children (X_5), the amount of municipal fertilizer in cubic meters (X_6), the amount of seed in kilograms (X_7), when the level of significance is 5%, while the regression coefficients for the rest of the variables included in the model were not proven to be significant at any of the familiar levels of significance.

It was also found that the productive elasticity of the resource of the number of automated working hours per hour (X_2), amounted to about (-0.05), and since it is negative, it indicates that there is a waste in the use of this resource in the production of wheat, Misr 2 variety in Kafr El-Sheikh Governorate, meaning that its use increased by 10% from the current level, it leads to a decrease in the output of the physical farm by 0.5%, as the production for this resource takes place in the third stage, which means that there is a waste in the use of this resource and farmers must rationalize their use of it, most importantly of it. While the productivity elasticity of the human labor resource of women (X_5) was estimated at (-0.02), and since it is also negative, it indicates that there is a waste in the use of this resource, meaning that an increase in its use by 10% over the current level leads to a decrease in physical agricultural output by 0.02 % as the production for this resource was in the third stage, which means that there is wastage in the use of this resource and farmers must rationalize their use of it.

Table No. (8) Attempts to measure the logarithmic double-production functions of wheat crop, class Egypt 2 in Kafr El-Sheikh Governorate

Model No.	Model	R	R ²	F _c
1	$\ln Y = 1.3 - 0.04 \ln x_2 - 0.01 \ln x_3 + 0.05 \ln x_4 - 0.02 \ln x_5 - 0.02 \ln x_6 - 0.02 \ln x_7 - 0.04 \ln x_8 + 0.10 \ln x_9 - 0.01 \ln x_{10}$ (0.15 (-) 0.36 () -0.41 () -1.36 (*) 2.4 (-) -1.56 ())1.03 () -0.60 (*) -1.99 (**) 6.42(	0.72	0.53	2.47*
2	$\ln Y = 1.29 - 0.04 \ln x_2 - 0.01 \ln x_3 + 0.05 \ln x_4 - 0.02 \ln x_5 - 0.02 \ln x_6 - 0.02 \ln x_7 - 0.04 \ln x_8 + 0.01 \ln x_9$ (7.50)** (-2.1)* (-0.7) (1.04) (-2.57)** -1.40 (-0.41) (0.34)	0.72	0.52	*2.9
3	$\ln Y = 1.3 - 0.05 \ln x_2 - 0.01 \ln x_3 + 0.06 \ln x_4 - 0.02 \ln x_5 - 0.02 \ln x_6 - 0.02 \ln x_7 - 0.04 \ln x_8$ (7.92)** (-2.23)* (-0.64) (1.25) (-1.93) (-1.93) (-2.67)** (-0.48)	0.72	0.52	**3.44
4	$\ln Y = 1.23 - 0.05 \ln x_2 - 0.01 \ln x_3 + 0.05 \ln x_4 - 0.02 \ln x_5 - 0.02 \ln x_6 - 0.03 \ln x_7$ (22.54)** (-2.42)* (-0.91) (1.19) (-2.44)* (-2.81) (-3.07)**	0.72	0.52	**4.12
5	$\ln Y = 1.22 - 0.05 \ln x_2 + 0.06 \ln x_4 - 0.02 \ln x_5 - 0.02 \ln x_6 - 0.03 \ln x_7$ (22.86)** (-2.54)* (1.59) (3.36)** (-3.11)** (-2.47)*	0.71	0.50	**4.81
6	$\ln Y = 1.28 - 0.03 \ln x_2 - 0.02 \ln x_5 + 0.02 \ln x_6 - 0.03 \ln x_7$ (37.81)** (-1.92)* (-3.35)** (-2.38)** (-3.08)**	0.67	0.45	**5.07

Source: The results of analyzing the data of research sample on the computer for the agricultural season (2020/2021).

*: Significant at the 0.05 level **: Significant at the 0.01 . lev

The productive elasticity of the quantity fertilizer resource in cubic meters (X₆), reached (-0.02), and since it is also negative, it indicates that there is a waste in the use of this resource, meaning that an increase in its use by 10% over the current level leads to a decrease in the physical agricultural output by 0.02% as the production for this resource was in the third stage, which means that there is a waste in the use of this resource and farmers must rationalize their use of it.

The production elasticity of the seed quantity resource in kilograms (X₇) is about (-0.03), and since it is also negative, it indicates that there is a waste in the use of this resource, meaning that an increase in its use by 10% over the current level leads to a decrease in the physical agricultural output by 0.3% as production for this resource was in the third stage, which means that there is wastage in the use of this resource and farmers must rationalize their use of it.

On the other hand, the total productivity elasticity of this model was estimated at (-0.06), and since it is negative and less than one, it indicates that there is a waste in the use of the productive resources included in the model combined, and that an increase of these combined resources by 10% over the current level leads to a decrease in the physical agricultural output for wheat crop, Misr 2 variety, with a percentage of 0.6%.

Standard estimation of the production functions of wheat crop, Giza 171 variety

By reviewing the different attempts to produce wheat crop functions for the Giza 171 variety in Kafr El-Sheikh Governorate using the (Backward) method, and based on the previously mentioned criteria in the comparison between the estimated functions, the most successful of these functions was the attempt No. (6) in Table No. (9), which came on the following Model:

$$\ln Y = 1.82 - 0.05 \ln X_5 + 0.05 \ln X_6 + 0.01 \ln X_7 - 0.53 \ln X_{10}$$

$$(7.85)^{**} \quad (-2.63)^* \quad (1.16) \quad (1.31) \quad (-3.55)^{**}$$

$$F = 4.92^{**} \quad R^2 = 0.44 \quad R = 0.66$$

The results of the analysis of the previous model indicate that it is statistically significant at the level of significance of 1%. The value of the determination coefficient (R^2), which amounted to about 0.44, shows that about 44% of the changes in the quantity of wheat crop production of the Giza 171 variety refer to the change in the independent variables included in the model combined, and by examining the significance the regression coefficients for the independent variables of the model show that the regression coefficient for each of the women's human labor resource (X_5), the amount of phosphorous, the effective unit (X_{10}), is stable at a significant level of 1%, while the regression coefficients for the rest of the variables included in the model were not proven at any of the familiar levels of significance.

It was also found that the productive elasticity of the human labor resource of women and children (X_5) amounted to about (-0.05), and because it is negative, it indicates that there is a waste in the use of this resource in the production of wheat, Giza 171 variety in Kafr El-Sheikh Governorate, meaning that its use increased by 10% from the current level, it leads to a decrease in the output of the physical farm by 0.5%, as production for this resource is in the third stage, which means that there is a waste in the use of this resource and farmers must rationalize their use of it.

While the production elasticity of the phosphorous quantity resource amounted to an effective unit (X_{10}), it amounted to about (-0.53) and because it is negative, it indicates that there is a waste in the use of this resource in the production of wheat, Giza 171 variety in Kafr El-Sheikh Governorate, meaning that its use increased by 10% over the level the current leads to a decrease in the output of the physical farm by 5.3%, as the production for this resource is in the third stage, which means that there is a waste in the use of this resource and farmers must rationalize their use of it. On the other hand, the total productivity elasticity of this model was estimated at (-0.46), and since it is negative and less than one, it indicates that there is a waste in the use of the productive resources included in the model combined, and that an increase of these combined resources by 10% over the current level leads to a decrease in agricultural output the physical for wheat crop Giza 171 variety with a percentage of 4.6%.

STATISTICAL ESTIMATION OF THE PRODUCTIVE COST FUNCTIONS OF WHEAT CROP VARIETIES IN KAFR EL-SHEIKH GOVERNORATE

Misr 1 variety

The total cost function of wheat crop Misr 1 variety was estimated in Kafr El-Sheikh Governorate in the linear, square and cubic form. The cubic model was chosen for its agreement with the economic and statistical logic, where the cost function took the following model: -

$$Y = -1523.6 + 154.6 X^1 - 89.4 X^2 + 1.6 X^3$$

$$(-25.0) \quad (1.6) \quad (-29.1) \quad (44.1)$$

$$F = 24.54^{**} \quad R^2 = 0.74 \quad R = 0.71$$

Where Y = total agricultural costs, estimated in LE

X = physical agricultural product in ardb

** significant at the 1% level * significant at the 5% level

The significance of the model as a whole was confirmed at the level of significance of 1%. Between the brackets represents the calculated (T)

From the previous equation, the average and marginal cost functions can be derived in the following form:

The average cost functions (AC)

$$AC = -1523.6 X^{-1} + 1954.6 - 89.4X + 1.6X^2$$

marginal cost function (MC)

$$MC = 1954.6 - 178.8X + 4.8X^2$$

By equating the functions of average and marginal costs, it was possible to reach the optimum production volume, that is, the output at the optimum capacity, which is the volume of production at the lowest point on the average costs curve, and it is estimated at about 26.8 ardebs, and since the average productivity per feddan of wheat crop in the research sample in Kafr El-Sheikh Governorate was about 15 ardebs. Therefore, it can be said that the optimum capacity can be achieved at an area of about 1.8 feddans, and by equalizing the marginal costs with the average price of an ardeb of the product in the research sample of about LE 613, we get the maximum production of profits, which amounted to about 108 ardebs, and according to the average productivity of an feddan of wheat crop with the same Sample it can be said that this profitable production can be achieved at an area of about 7 feddans.

Table No. (9) Attempts to measure the logarithmic double productivity functions of wheat crop, Giza 171 variety in Kafr El-Sheikh Governorate

Model No.	Model	R	R ²	F _c
1	$\ln Y = 1.89 + 0.01 \ln x_2 - 0.01 \ln x_3 + 0.07 \ln x_4 - 0.04 \ln x_5 + 0.01 \ln x_6 + 0.06 \ln x_7 - 0.06 \ln x_8 + 0.08 \ln x_9$ (0.54 () -0.37 () 0.58. (*)0.73 () -1.70) (0.37 () -0.44 (0.31) (** (4.10))	0.69	0.47	1.97
2	$\ln Y = 1.81 - 0.01 \ln x_3 + 0.08 \ln x_4 - 0.04 \ln x_5 + 0.01 \ln x_6 + 0.06 \ln x_7 - 0.06 \ln x_8 - 0.03 \ln x_9 - 0.52 \ln x_{10}$ (-2.95)** (0.86) -0.25((0.61) 081). (-1.71) ((-0.50) (0.46)** (4.94))	0.68	0.47	2.3
3	$\ln Y = 1.74 - 0.01 \ln x_3 + 0.09 \ln x_4 - 0.04 \ln x_5 + 0.01 \ln x_6 + 0.05 \ln x_7 + 0.02 \ln x_9 - 0.52 \ln x_{10}$ ** (-3.01) 0.96.) (0.57) (080). (-1.73) ((0.53) (-0.56)** (6.89))	0.68	0.47	*2.74
4	$\ln Y = 1.74 - 0.01 \ln x_3 + 0.09 \ln x_4 - 0.04 \ln x_5 + 0.01 \ln x_6 + 0.05 \ln x_7 + 0.02 \ln x_9 - 0.52 \ln x_{10}$ ** .0) (-3.5)82 ((0.98) (1.15) -1.69) (-0.30) (** (7.27))	0.68	0.46	**3.25
6	$\ln Y = 1.82 - 0.05 \ln x_5 + 0.05 \ln x_6 + 0.01 \ln x_7 - 0.53 \ln x_{10}$ (7.85) ** (-2.63) * (1.16) (1.31) (-3.55)**	0.66	0.44	**4.92
7	$\ln Y = 1.84 - 0.06 \ln x_5 + 0.08 \ln x_7 - 0.55 \ln x_{10}$ (-3.63)** .1)1 (**)3.33 (-** .7)94(	0.64	0.41	**6.03
8	$\ln Y = 1.96 - 0.06 \ln x_5 - 0.53 \ln x_{10}$ **)3.52 (-**)3.5 - (**)9.36(	0.62	0.38	**8.37

Source: The results of analyzing the data of the human body sample on the computer for the agricultural season (2020/2021).

* Significant at the 0.05 level ** Significant at the 0.01 level

Misir 2 variety

The total cost function of wheat crop Misr 2 variety was estimated in Kafr El-Sheikh Governorate in linear, square and cubic forms, and the cubic model was chosen for its agreement with the economic and statistical logic.

Where the cost function took the following form: -

$$Y = 1273.2 + 1451.1 X^1 - 120.3 X^2 + 4.0 X^3$$

$$(1.8) \quad (0.87) \quad (-1.03) \quad (1.59)$$

$$F = 22.90^{**} \quad R^2 = 0.73 \quad R = 0.71$$

Where Y = total agricultural costs estimated in LE.

X = physical agricultural output in ardab

** Significant at the 1% level. * Significant at the 5% level, and the model as a whole was found to be significant at the 1% level of significance.

Between the brackets represents the calculated (T)

By equating the functions of the average and marginal costs, it was possible to reach the optimal production volume, that is, the output at the optimum capacity, which is the volume of production at the lowest point on the average cost curve, and it is estimated at about 15.9 ardebs, and since the average productivity per feddan of wheat crop in the research sample in Kafr El-Sheikh Governorate was about 15.8 ardebs. Therefore, it can be said that the optimum capacity can be achieved at an area of about 1 feddan, and by equalizing the marginal costs with the average price of an ardeb of the product in the research sample of about LE 667.8, we get the maximum production of profits, which amounted to about 1.8 feddans, and according to the average productivity of an feddan of wheat crop in the same sample, we can saying that this maximum production of profits amounted to about 16.9 ardebs can be achieved when an area of about 1.1 feddans.

Giza 171 variety

Estimating the function of the total costs of producing the wheat crop, Giza 171 variety in Kafr El-Sheikh Governorate in linear, square and cubic forms. The cubic model was chosen for its agreement with the economic and statistical logic Where the cost function took the following form: -

$$Y = 8104.05 + 336.5 X^1 - 10.6 X^2 + 0.19 X^3$$

(3.78)** (1.26) (-1.03) (1.67)

F = 42.40** R² = 0.81 R = 0.91

Where Y = total agricultural costs, estimated in LE

X = physical agricultural output in ardeb

** Significant at 1% level * significant at 5% level the significance of the model as a whole was confirmed at the level of significance of 1%. Between the brackets represents the computed (t).

From the previous equation, the functions of average and marginal costs can be derived in the following form:

The average cost functions (AC):

$$AC = 8104.05X^{-1} + 336.5 - 10.6X + 0.19X^2$$

Marginal cost function (MC):

$$MC = 336.5 - 21.2X + 0.57X^2$$

By equating the functions of average and marginal costs, it was possible to reach the optimal production volume, meaning that the output at the optimum capacity, which is the volume of production at the lowest point on the average costs curve, is estimated at 40.7 ardebs. Therefore, it can be said that the optimal capacity can be achieved at an area of about 3.5 feddans, and by equalizing the marginal costs with the average price of an ardeb of the product in the research sample of about LE 623, we get the maximum production of profits, which amounted to about 1.8 feddans, and according to the average productivity of an feddan of wheat crop with the same the sample, it can be said that this most profitable production amounted to about 16.9 ardebs, which could be achieved at an area of about 4.1 feddans.

THE PROBLEMS THAT FACED FARMERS OF WHEAT VARIETIES IN RESEARCH SAMPLE

In order to find out the problems faced by wheat farmers for the cultivated varieties, which include the Misr 1 variety, Misr 2 variety, and Giza 171 in the research sample, it was found

from Table (10) that about 21 farmers, 3 farmers, and 5 farmers from the farmers of the Misr 1 variety 1, Misr 2, and Giza 171 respectively, representing about 70.0%, 10.0% and 16.67 % of the total sample members for the previous varieties, respectively, answered yes to the availability of seeds, while the answer was no availability of seeds about 9, 27, 25, representing about 30.0%, 90.0% and 3.33% of farmers, respectively.

- That about 14 farmers, 3 farmers, and 4 farmers of the category Misr 1, Misr 2, Giza 171, respectively, representing about 46.67%, 10.0% and 13.33% of the total sample members for the previous varieties, respectively. Their answer was that the price is appropriate, while the answer was inappropriate about 16, and 27 and 26 representing about 53.33%, 90.0%, and 86.67% of farmers, respectively, for each of them.

- That about 19 farmers, 3 farmers, and 5 farmers of the Misr 1, Misr 2, Giza 171, respectively, representing about 63.33%, 10.0% and 16.67% of the total sample members for the previous varieties, respectively. Their answer was high productivity, while the answer was no high productivity. About 11, 27 and 25, representing about 36.67%, 90.0%, and 83.33% of farmers, respectively, for each of them.

- That about 18 farmers, 2 farmers, and 5 farmers of the category Misr 1, Misr 2, Giza 171, respectively, representing about 60.0%, 6.67% and 16.67% of the total sample members for the previous varieties, respectively. Their answer was suitable for soil, while the answer was not suitable for soil about 12, 28 and 25, representing about 40.0%, 93.33%, and 83.33% of farmers, respectively, for each of them.

- That about 19 farmers, 3 farmers, and 6 farmers of the Misr 1, Misr 2, Giza 171, respectively, representing about 63.33%, 10.0% and 20.0% of the total sample members for the previous varieties, respectively. About 11, 27 and 24, representing about 36.67%, 90% and 80% of farmers, respectively, for each of them.

Table No. (10)- Problems faced wheat farmers in the research sample

Item	Misr 1				Misr 2				171 Giza			
	Yes		NO		Yes		NO		Yes		NO	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Availability of seeds	21	70.0	9	30.0	3	10.0	27	90.0	5	16.67	25	83.33
good price	14	46.67	16	53.33	3	10.0	27	90.0	4	13.33	26	86.67
high productivity	19	63.33	11	36.67	3	10.0	27	90.0	5	16.67	25	83.33
Suitable soil	18	60.0	12	40.0	2	6.67	28	93.33	5	16.67	25	83.33
disease resistant	19	63.33	11	36.67	3	10.0	27	90.0	6	20.0	24	80.0
drought tolerant	18	60.0	12	40.0	3	10.0	27	90.0	6	20.0	24	80.0
forward	18	60.0	12	40.0	3	10.0	27	90.0	6	20.0	24	80.0
high price	14	46.67	16	53.33	2	6.67	28	93.33	5	16.67	25	83.33
Fits the consumer's taste	18	0.60	12	40.0	3	10.0	27	90.0	5	16.67	25	83.33

Source: compiled and calculated from the results of the research sample questionnaire for the agricultural season (2020/2021).

- That about 18 farmers, 3 farmers, and 6 farmers of the **Misr 1** variety, **Misr 2**, Giza 171 respectively, representing about 60.0%, 10.0% and 20.0% of the total sample members for the previous varieties, respectively. The cultivars for drought are about 12, 27 and 24, representing about 40.0%, 90.0% and 80.0% of farmers, respectively, for each of them.
- That about 18 farmers, 3 farmers, and 6 farmers of the Egypt class 1, Egypt 2, Giza 171 respectively, representing about 60.0%, 10.0%, 20.0% of the total sample members for the previous varieties, respectively. Early maturity about 12, 27, 24, representing about 40%, 90% and 80% respectively, for each of them.
- That about 14 farmers, 2 farmers, and 5 farmers of the category **Misr 1**, **Misr 2**, Giza 171, respectively, representing about 46.67%, 6.67% and 16.67% of the total sample members for the previous varieties, respectively. About 16, 28 and 25, representing about 53.33%, 93.33% and 83.33% of farmers, respectively.
- That about 18 farmers, 3 farmers, and 5 farmers of the category **Misr 1**, **Misr 2**, Giza 171, respectively, representing about 60.0%, 10.0% and 16.67% of the total sample members for the previous varieties, respectively. Their answer was yes to suit the consumer's taste, while the answer was no appropriate to the consumer's taste, about 12, 27 and 25 represent about 40.0%, 90.0%, and 83.33% of farmers, respectively.

RECOMMENDATIONS

Related to results of the research, it recommends the following:

- 1- Raising the efficiency of using the productive inputs used in conducting agricultural operations for the research crop, which leads to raising the productive efficiency of farmers and then increasing their profits.
- 2- The need for farmers to adopt technical recommendations in the production of crops and their knowledge of them through the Agricultural Extension System in order to raise their productive efficiency.
- 3- Attention to the development of high-quality and high-production varieties that are more tolerant of drought, salinity and heat.
- 4- Generalizing the cultivation of the highest-productive varieties of wheat, namely Giza 9, Gemiza 11, Sakha 93, and Misr 2.
- 5- The necessity of looking at the problems of farmers in Kafr El-Sheikh Governorate and working to address these problems and find developing solutions to them.

CONCLUSION

Wheat crop is one of the most important grain crops, to which the state pays special attention to improving its productivity. Wheat represents an important position in the Egyptian food security strategy, especially in light of the recent fluctuation of its prices globally, as well as its use in biofuel production for some countries, including the U.S.A and Brazil, which it may be reflected in the global supply of it, and despite the increase in wheat production in Egypt in recent years, this increase was offset by an increase in the wheat import bill as a result of the steady increase in the population and then local consumption, and food grain crops play an important role in agricultural foreign trade, at the time Wheat is one of the most important Egyptian agricultural imports.

By studying the average relative importance of the total production of wheat in Kafr El-Sheikh Governorate compared to the total production of wheat in Egypt, it was found that it amounted to about 6.35%. It is also clear that the value of the cost of production inputs, as well as the relative importance of each of them to the total costs of wheat varieties (Misr 1, Misr 2, Giza 171) in question, where the average total costs of them amounted to about LE 12,820, 12.04 and 10.55 thousand/ feddan for each of them, respectively, and the average of the fixed costs are about LE 5.6, 4.78, and 5.69 thousand / feddan for each of them, respectively, representing about 43.77%, 39.7% and 53.9% of the average total costs, and the average public expenses amounted to about LE 40.76, 90.19 and 75.32 / feddan, representing about 0.32 %, 0.75%, 0.71% of each, respectively, of the average total costs.

The production functions were estimated in the logarithmic form, and they gave the best results in order to estimate the economic efficiency used in the production of wheat varieties, thus activating the positive factors and discouraging negative factors to reach a better use of the productive resources used in the production of this crop. The cubic model was chosen, and the optimum and maximal size of the profits were estimated for each of the wheat varieties, Misr 1, Misr 2, and Giza 171, while the variable costs amounted to about LE 7.2, 7.26 and 4.86 thousand/ feddan for each of them, respectively. The economic indicators for the production of the most important varieties of wheat grown in Kafr El-Sheikh Governorate were studied, which are the varieties of Misr 1, Misr 2, and Giza 171. The problems faced by wheat farmers in

the research sample were also studied, and the opinions of farmers in these problems were studied.

References

- 1- Abdel Qader, Ahmed (2014), The Economics of Wheat Production in the New Reclaimed Lands Compared to the Old Lands in Qena Governorate, The Egyptian Journal of Agricultural Economics, Volume Twenty-four, Issue Four (B), December
- 2- Al-Qazzaz, Nasr &etal (2015), Economic Factors Affecting the Size of the Food Gap of Wheat in Egypt, The Egyptian Journal of Agricultural Economics, Volume 25 Fourth issue, December.
- 3- Mustafa, Abdel-Ghani Mustafa & Samir Abdel Ghaffar (2000), Farmers' acceptance of new wheat varieties recommended for cultivation in some villages of Kafr El-Sheikh and Gharbia Governorate, Research Bulletin, Agricultural Research Center, Agricultural Extension and Rural Development Research Institute.
- 4- Al-Tarawi, Abdul-Sattar (2007), Possibilities of Vertical Agricultural Expansion in Kafr El-Sheikh Governorate, Master Thesis, Department of Agricultural Economics, Faculty of Agriculture, Tanta University.
- 5- Badawi, Eman (2015), The Role of Wheat Crop in Achieving Egyptian Food Security, The Egyptian Journal of Agricultural Economics, Volume 25, Issue No. 4, December. Shata, Mohamed Ali (2007), An analytical economic study of the effects of the varietal distribution of wheat crop in Dakahlia Governorate, Mansoura University - Faculty of Agriculture, Arab Conference from April 10-11.
- 6- Badawi, Eman and etal (2019), An economic analysis of the impact of the use of new varieties on wheat production in Egypt, The Egyptian Journal of Agricultural Economics - Volume Nineteen - Issue Three - September.
- 7- Badr, Omar and etal (2014), The Impact of Using Agricultural Mechanization Techniques on the Economics of Wheat Crop in Gharbia Governorate, The Egyptian Journal of Agricultural Economics, Volume Twenty-four, Issue Four (B)), December.
- 8- Fahmy, Heba & Walid Mohamed Faris (2016), Assessment of the effect of using cultivar technology on wheat production The Egyptian Journal of Agricultural Economics - Volume Twenty-Basic - Issue Four - December (b).
- 9- Kenawy, Abeer and etal (2008), The economics of using varietal change technology on wheat production in Beheira Governorate, Egyptian Journal of Agricultural Economics - Volume (18) Issue One - March.
- 10- Meshaal, Ahmed & Gamal El-Din Ahmed Ibrahim (2011), Economic evaluation of the impact of the use of modern agricultural technology on the productivity of the wheat crop in the new lands, a case study (east of the delta region), the Egyptian Journal of Agricultural Economics - Volume Twenty-first, No. Third, September.
- 11- Nassar, Zaki & Saad, Mohamed (2016), Study of the economic productive efficiency of wheat and corn crops in the new lands of Matrouh Governorate, The Egyptian Journal of Agricultural Economics, Volume 26, Issue No. 4, December.
- 12- Qassem, Ahmeand etal (2017), Economic Efficiency of the Most Important Wheat Varieties Cultivated in Alexandria Governorate (A Case Study in Al-Amiriya Region), the 25th Conference for Agricultural Economists (1-2 November).
- 13- Seddik, Hossam El-Din (2016), Analysis of Agricultural Policies for Wheat and Maize Crops in Egypt, The Arab Journal of Agricultural Economics, Volume Twenty-six, Issue Four, December.
- 14- Soliman, Saad. & Bassyouni, Gaber, (2001), Economics of Wheat Crop in Egypt under New Domestic and Global Changes, 9th conference of Agricultural Economist, , Cairo, Egypt.