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An Economic Study of the Impact of Production and Marketing Fluctuations on the Onion Crop in Egypt

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ABSTRACT

The research aimed at studying the production situation of onion crop in Egypt and Gharbia governorate during the period from (2009-2022) and estimating the production and marketing efficiency of the study sample, the study has reached a set of results, the most important of which are the following. 1 – the average absolute marketing margin for the three tracts (wholesale-product) of the onion crop amounted to about 2052.33 pounds, that is, the average relative margin was about 29.38%. While the average absolute marketing margin (retail – wholesale) of the onion crop was about 6977.17 pounds , and the average relative margin was about 49.97%. The average absolute marketing margin (retail – product) of the onion crop was about 9029.5 pounds, that is, the average relative margin was about 64.67 %. While the average share was about 64.67 piasters. 2-the marketing efficiency of the onion crop in the research sample reached about 21.97%, which means a decrease in marketing efficiency as a result of the high share of marketing intermediaries, i.e., retail prices increase on the one hand and the price received by the product decrease on the other hand, which means that there is a malfunction in the functions of the marketing device that must be addressed .3- The number of repetitions of this problem reached about 77 farmers with a percentage of about 96%, and the confidence period for the probability of the problem ranged from a minimum of about 92% to a maximum of about 100%, while in second place came the traders saving onions in order to increase the price, as the number of repetitions of this problem reached about 75 farmers with a percentage of about 94%, and the confidence period for the probability of the problem ranged from a minimum of about 96% to a maximum of about 100% about 88% and a maximum of about 99%, and also came in third place the high percentage of marketing margins for wholesalers and the low share of the product.

Introduction

The onion crop is one of the important crops in Egyptian agriculture because it is one of the export crops, which occupies a position in the Georgian trade, where onions occupy the fourth place in the exports of vegetable and fruit crops, where the exported quantity amounted to about 816 thousand tons with a value of about 145.8 million dollars in 2022(8). The Egyptian onion occupies a great place in most Egyptian homes, where it is included among the components of daily meals for individuals, both with its multiple uses in cooking, in addition to multiple health benefits, as it works to reduce cholesterol in the blood and prevent thrombosis(5), and also supports the body's immune system from the formation of cancer cells, as well as to treat some respiratory and digestive problems, in addition to other multiple benefits, in addition to being an important industrial crop based on the drying and pickling industries, these industries absorb labor and provide job opportunities, and generate currency difficult(1).

The area planted with a single (full-ripened) onion crop in the 2022/2023 season at the level of the Republic, with old lands and New Lands, amounted to about 219,771 acres, with a decrease of about 10,844 acres, which is about 4.70% from the area planted with the crop in the 2021/2022 season, which amounted to about 230,615 acres(6). The Western governorate came at the forefront of the governorates in terms of the area planted with onions, which amounted to about 32.17 thousand acres, with a production of 495.6 thousand tons (6). In recent years, the Egyptian onion has suffered from sharp price fluctuations in its prices, which reflected its impact on the productive side, as the fluctuation in its prices led to a decline in the cultivated areas on the one hand, and this reflected on the income of both the producer and the consumer on the other hand, which led to negative effects on

production and marketing policies. Therefore, it has become necessary to identify the efficiency of the performance of marketing services across the various marketing routes and margins, which is one of the most important factors affecting the stability and expansion of production, as the rise of each of them leads to an increase in the share of intermediaries in marketing operations, which results in a decrease in marketing efficiency as a result of from the decrease in the volume of its foreign trade and the return of the dollar yield, the impact on the balance Egyptian agricultural.

The research aimed at studying the production situation of onion crop in Egypt and Gharbia governorate during the period from (2009-2022) and estimating the production and marketing efficiency of the study sample by studying the following sub-goals:
***First**: the production situation of the onion crop in Egypt*
***Second**: foreign trade of onions*
***Third**: productive and economic indicators of the onion crop in the study sample*
***Fourth**: routes, margins and marketing efficiency of the onion crop in the study sample*
***Fifth**: the most important production and marketing problems facing the producers of the onion crop in the study sample .*

Materials and methods

Research method and data sources

In achieving its goals, the research relied on the use of both descriptive and quantitative economic methods and the functions of the general time trend were estimated, in addition to the use of some ratios, averages and some economic indicators, marketing margins for various marketing methods were also calculated, in addition to an estimate to estimate the marketing efficiency of the onion crop. In achieving its objectives, the research relied on secondary data obtained from the Ministry of Agriculture and land reclamation, in addition to the data obtained from the records of the statistics department in Gharbia governorate, in addition to the primary data obtained from the questionnaire form prepared for this purpose .

Characterization of the study sample

A-governorate selection: the multi-stage random sampling method and the use of random number tables were used when selecting farmers at the level of selected villages, and Al-Gharbia governorate was chosen as a spatial scope for conducting research and making a questionnaire form, to collect field data for the 2022/2023 season as the most important governorates of the Republic in onion cultivation, where its area represents about 22.35% of the total area planted with onions at the national level during the average period (2020/2022) as shown in Table No. (6).

B-choosing the center: Al Gharbia governorate includes 8 administrative centers and Tanta Center in Al Gharbia governorate was chosen based on the relative importance of the area, where it came at the top of the Centers in the governorate as shown from the data of Table No. (1), where the total area planted with onions amounted to about 13.3 thousand acres, representing about 40.868% of the total area planted with onions in Al Gharbia governorate, amounting to about 32.5 thousand acres, and with an estimated production of about 198.8 thousand tons, representing about 40.1% of the total onion production in the governorate, amounting to about 495.6 thousand tons for the agricultural season 2022/2023. The Centers of qutour, bassioun, grand Mahalla, Kafr El Zayat, Santa, zefti, samnoud ranked from second to eighth with an average area of about 6.2،4.4 ،4.3 ،2 ،1.4،0.8 ،0.2 a thousand acres for each of them in order.

Table (1): the relative importance of the Centers of the Western Province in the area and production of onions 2023**.**

Center	Single onion(Mature)			Intercropped Onion			Total			Relative Importance%	
	Area (Fed.)	Yield (Ton/Fed.)	Prod. (Ton)	Area (Fed.)	Yield (Ton/Fed.)	Prod. (Ton)	Area (Fed.)	Yield (Ton/Fed.)	Prod. (Ton)	Area (Fed.)	Yield (Ton/Fed.)
Tanta	13256	15	198840	_	_	_	13256	15	198840	40.77	40.12
Qutour	6209	18	111762	_	_	_	6209	18	111762	19.10	22.55
EL-Santa	1381	9	12429	_	_	_	1381	9	12429	4.25	2.51
ZaFta	750	12	9000	_	_	_	750	12	9000	2.31	1.82
Kafr al-Zayyat	1991	11	21901	_	_	_	1991	11	21901	6.12	4.42
Basyoun	4057	17	68969	345	16	5520	4402	16.5	73026	13.54	14.74
Mahalla al-Kubra	4288	15	64320	_	_	_	4288	15	64320	13.19	12.98
Samannoud	238	18	4284	_	_	_	238	18	4284	0.73	0.86
Total	32170	14.4	491505	345	16	5520	32515	14.3	495562	100	100

Source: Ministry of Agriculture and Land Reclamation, Directorate of Agriculture in Gharbia, Department of Statistics, unpublished data 2023.

C - at the level of selected villages: the number of villages of Tanta Center reached about 54 villages according to the relative importance of the area, the villages of Shober, Nawaj, damasht came in the first three ranks with an area of about 2029, 1000.8, 947.1 acres representing about 15.31%, 7.55%, 7.14% of each of them respectively, while the villages of Kafr Sharfa, Kafr Essam, Kafr Massoud came in the last ranks in terms of cultivated area with an area of about 6.54, 3.54, and 1 acres, representing about 0.05%, 0.03%, and 0.01% each, respectively, as shown in Table No. (2).

Research sample

a multi-stage random sample was taken from the first three villages in Tanta center, namely the villages of Shober, Nawaj, which was destroyed by 40 forms for the first village, 40 forms for the second and third villages by 20 forms for each village for a total of 80 product forms representing about 50% of the total sample of the study. These farms were selected randomly and took into account that these farms are similar in all natural and agricultural conditions to serve the research purposes.: The wholesaler's form was distributed to the wholesale market in Gharbia governorate with 40 forms representing about 25% of the total sample of the study. The retailer's form was distributed to retailers in some Tanta markets in Gharbia governorate with 40 forms representing about 25% of the total sample of the study.

Research results and their discussion:

First: the current situation of onion production in Egypt:

1-productive indicators of the onion crop in Egypt: reviewing the productive indicators of the single full-ripened onion crop, it turned out that the cultivated area ranged from a minimum of about 115.3 thousand acres in 2009 to a maximum of about 230.6

Table (2): the relative importance of onion crop areas in Tanta Center in Gharbia governorate for the agricultural season 2022/2023

Ser.	The village	Area (Fed.)	%	Ser.	The village	Area (Fed.)	%
1	Shuni	84.46	0.64	28	H Bashir	352.08	2.66
2	Al-Karsa	24.42	0.18	29	Damshit	947.13	7.14
3	K Al-Sahel	54	0.41	30	K Damshit	665.88	5.02
4	K Al-Shurafa	6.54	0.05	31	Nawaj	1000.75	7.55
5	Fisha Salim	100	0.75	32	Kharsit	201	1.52
6	B Tanta	38	0.29	33	K Al Hama	19	0.14
7	Siger	40.71	0.31	34	K Essam	3.54	0.03
8	Qahfa	20.04	0.15	35	Chopper	2029.92	15.31
9	Suburbay	649.42	4.9	36	M Sudan	503.83	3.8
10	M. Janzour	28.66667	0.22	37	B Al Hajar	379.58	2.86
11	Sanadid	105	0.79	38	Mahalla Menouf	525.29	3.96
12	K. Sh. Saim	31	0.23	39	M Al Junaidi	267.17	2.02
13	Dafra	204.625	1.54	40	K Al Iraqi	16.25	0.12
14	Nafia	147	1.11	41	Dakoda	146.25	1.1
15	M. H. Qiblia	68.29	0.52	42	Shakarf	56.63	0.43
16	M. H. Bahriya	118.04	0.89	43	T Caesar	783.67	5.91
17	K. Abu Dawud	13.42	0.1	44	H Burma	113	0.85
18	K. Sebas	24.71	0.19	45	K Al Mansha	9	0.07
19	Sabtas	9.92	0.07	46	Berma	820.33	6.19
20	Alwan	15	0.11	47	M Al-Hawashat	5.29	0.04
21	Tarna	7.625	0.06	48	K Al-Mansoura	18	0.14
22	Akhnawai	313	2.36	49	Shubra Al-Namla	27.92	0.21
23	Al Rajdia	439.17	3.31	50	M. Marhoum	118	0.89
24	Al Awqaf St.	669.08	5.05	51	Al-Gawhariya	17.29	0.13
25	El Hessa St.	575.88	4.34	52	K. Khader	40	0.3
26	Rouh	211	1.59	53	K. Masoud	1.04	0.01
27	El Ramlieh	189.17	1.43	54		0	
		4188.17	**31.59**			**9067.83**	**68.41**

Source: Collected and calculated from the Ministry of Agriculture and Land Reclamation, Directorate of Agriculture in Gharbia, Department of Statistics, unpublished data 2023.

Thousand acres in 2022 with an average year of about 164.2 thousand acres. While the acreage productivity ranged between a minimum of about 13.6 tons in 2009 and a maximum of about 16.4 tons in 2017 with an average of about 13.6 tons. While the total production ranged between a minimum of about 1563.4 thousand tons in 2009 and a maximum of about 3438.3 thousand tons in 2022 with an average year of about 2407.8 thousand tons as shown in Table No. (3). By estimating the equations of the temporal general trend of the development of the production indicators of the single full-ripened onion crop during the period (2009-2022), it was found that there is an increasing and statistically significant general trend at a morale level of 0.01, 0.05, which amounted to about 5.4%, 0.6%, 5.9% for both area, productivity and production by an annual increase of about 8.87 thousand acres, 0.81 tons/acre, 142.06 thousand tons each, respectively. Reviewing the production indicators of the loaded full-

ripened onion crop, it turned out that the cultivated area ranged from a minimum of about 3.5 thousand acres in 2021 to a maximum of about 14.4 thousand acres in 2009, with an average year of about 9.2 thousand acres. While the acreage productivity ranged between a minimum of about 8.7 tons in 2017 and a maximum of about 13.4 tons in 2021 with an average of about 10.5 tons. While the total production ranged from a minimum of about 33.4 thousand tons in 2017 to a maximum of about 151.8 thousand tons in 2015 with an average year of about 98.5 thousand tons. As shown in Table No. (3).

Estimating the equations of the temporal general trend of the development of production indicators of the loaded full-ripened onion crop during the period (2009-2022), it was found that there is a general decreasing trend and statistically significant at a morale level of 0.01, 0.05, which amounted to about -8.6%, -7.6% for both area and production by an annual decrease of about 791 acres, 7.48 thousand tons each, respectively. While the statistical significance of acreage productivity has not been proven at different levels of significance. Reviewing the production indicators of the onion crop, it turned out that the cultivated area ranged from a minimum of about 380 acres in 2020 to a maximum of about 3.87 thousand acres in 2011, with an average year of about 870 acres. While the acreage productivity ranged from a minimum of about 10 tons in 2012 to a maximum of about 19 tons in 2019 with an average of about 13.14 tons. While the total production ranged from a minimum of about 4.4 thousand tons in 2013 to a maximum of about 41.6 thousand tons in 2011 with an average year of about 10.4 thousand tons as shown in Table No. (3).
By estimating the equations of the temporal general trend of the development of the production indicators of the onion pickles crop during the period (2009-2022), it was found that there is an increasing and statistically significant general trend at a morale level of 0.01, which amounted to about 4.6% of the acre productivity with an annual increase of about 0.6 tons/acre. While the statistical significance of the total area and production has not been proven at different levels of significance. Reviewing the production indicators of the onion crop heads (black seed), it was found that the cultivated area ranged from a minimum of about 850 acres in 2018 to a maximum of about 4.82 thousand acres in 2022 with an average year of about 1.85 thousand acres. While the acre productivity ranged between a minimum of about 0.24 tons in 2011 and a maximum of about 0.55 tons in 2022 with an average of about 0.33 tons. While the total production ranged from a minimum of about 240 tons in 2013 to a maximum of about 2.64 tons in 2022, with an average year of about 690 tons as shown in Table No. (3).

Estimating the equations of the temporal general trend of the development of productive indicators of the onion crop (black seed) during the period (2009-2022), it was found that there is an increasing and statistically significant general trend at a morale level of 0.01, 0.05 amounting to about 5.7%, 11.5% for both acre productivity and production with an annual increase of about 0.01 tons/acre, 79 tons each, respectively. While the statistical significance of the area has not been proven at different levels of significance. Reviewing the production indicators of the total onion crop, it turned out that the cultivated area ranged from a minimum of about 127.6 thousand acres in 2013 to a maximum of about 243.4 thousand acres in 2022, with an average year of about 176.2 thousand acres. While the acreage productivity ranged from a minimum of about 13 tons in 2009 to a maximum of about 15.1 tons in 2017 with an average of about 14 tons. While the total production ranged from a minimum of about 1717.2 thousand tons in 2009 to a maximum of about 3516.6 thousand tons in 2022 with an average year of about 2517.46 thousand tons.
Estimating the equations of the temporal general trend of the development of production indicators for the total onion crop during the period (2009-2022), it was found that there is an increasing and statistically significant general trend at a morale level of 0.01, 0.05, amounting to about 5.4%, 0.6%, 5.9% for both acreage and productivity and production by an annual increase of about 9.5 thousand tons, 0.84 tons/acre, 148.53 tons each, respectively.

2-The relative importance of the Republic's governorates for the area and production of the onion crop in Egypt for the average period 2020/2022: Reviewing the relative importance of the governorates of the Republic for the area and production of the onion crop in Egypt for the average period 2020/2022, as shown in Table No. (4), it turned out that the Western governorate came at the forefront of the governorates of the Republic in terms of the area of onions planted, which amounted to about 49.85 thousand acres, representing about 22.35% of the total area of the Republic of about 223 thousand acres, with a production of about 857.26 thousand tons, representing about 26.58% of the total onion production in the Republic of about 3225.17 thousand tons, followed by Dakahlia, Sharqiya, shuhaj, Beni Suef and Beheira governorates in the second to sixth ranks with an area of 28.95, 20.3, 18.34, 16.88, 13.57 thousand acres representing about 12.98% ،9.1% ،8.22% ،7.57% ،6.08% for each of them, respectively, with a production of about 412.15, 215.61, 323.28, 183.39, 20.8 thousand tons, representing about 12.78% ،6.69% ،10.02% ،5.69% ،6.46% for each of them in order.

3 - productive indicators of the onion crop in Al Gharbia governorate during the period from (2009-2022): reviewing the productive indicators of the onion crop in Al Gharbia governorate during the period from (2009-2022) as shown in Table No. (5), it was found that the cultivated area ranged from a minimum of about 27.82 thousand acres in 2009 to a maximum of about 53.21 thousand acres in 2022 with an average year of about 42.01 thousand acres. While the acre productivity ranged between a minimum of about 12.55 tons in 2009 and a maximum of about 17.8 tons in 2022 with an average of about 15.18 tons. While the total production ranged from a minimum of about 349.11 thousand tons in 2009 to a maximum of about 947.1 thousand tons with an average year of about 649.39 thousand tons.

Estimating the equations of the temporal general trend of the development of onion crop production indicators in Gharbia governorate during the period from (2009-2022), it was found that there is an increasing general trend and statistically significant at a morale level of 0.01 amounting to about 7%, 2.3%, 0.7% for both area and production and production by an annual increase of about 2.94 thousand acres, 0.35 tons/acre, 5.55 thousand tons each, respectively (8).

Second: foreign trade of onions

1 - the quantity and value of Egyptian exports of onions during the period (2009-2022): reviewing the development of the quantity and value of Egyptian exports of onions during the period (2009-2022) as shown in Table No. (6), it was found that the amount of exports ranged from a minimum of about 337.43 thousand tons in 2012 to a maximum of about 601.81 thousand tons in 2019 with an average annual of about 461.99 thousand tons, while the value of exports ranged from the minimum reached about 87.67 million dollars in 2021 and the maximum reached about 235.28 million dollars in 2015 with an annual average of about 174.75 million dollars.

2 - the quantity and value of Egyptian exports of dried onions during the period (2009-2022): reviewing the development of the quantity and value of Egyptian exports of dried onions during the period (2009-2022) as shown in Table No. (9), it was found that the amount of exports ranged from a minimum of about 11.9 thousand tons in 2019 to a maximum of about 33.73 thousand tons in 2021 with an average annual of about 20.45 thousand tons, while the value of exports ranged from the minimum reached about 25.79 million dollars in 2013 and the maximum reached about 52.37 million dollars in 2021 with an annual average of about 34.56 million dollars.

3 - the quantity and value of Egyptian exports from the conversion of dried onions to full-ripened onions during the period (2009-2022): reviewing the development of the quantity and value of Egyptian exports from the conversion of dried onions to full-ripened onions during the period (2009-2022) as shown in Table No. (6), it was found that the amount of exports ranged from a minimum of about 119.5 thousand tons in 2019 to a maximum of about 337.28 thousand tons in 2021 with an average annual of about 204.5 thousand tons.

4 - reviewing the development of the total quantity and value of Egyptian onion exports during the period (2009-2022): as indicated in Table No. (6), it was found that the amount of exports ranged from a minimum of about 525.93 thousand tons in 2005 to a maximum of about 816.7 thousand tons in 2022 with an annual average of about 666.5 thousand tons, while the value of exports ranged from a minimum of about 140.04 million dollars in 2021 to the maximum amount was about 267.4 million dollars in 2015 with an annual average of about 209.1 million dollars. The estimation of the equations of the general trend in time for both the value of exports of fresh onions and the total value of exports of fresh and dried onions showed a decreasing general trend and statistically significant at the probability level of 0.05 with an annual rate of decrease of about 4%, 2.8% for each of them, respectively. While the statistical significance has not been proven at the different probability levels for both the amount of exports of raw and dried onions.

Third: productive and economic indicators of the onion crop in the study sample:

The productive and economic indicators of the onion crop in the research sample in Gharbia governorate for the agricultural season 2022/2021 include as shown in Table No. (7) the following is clear:

1-the relative importance of cost items: the cost items of producing an acre of onions include the value of both plowing and preparing the land for agriculture, the necessary crops for growing an acre of onions, chemical fertilizers, pesticides, irrigation, labor, transportation, where the value is about 2.2 ،8 ،7.8 ،4.3 ،14 ،12.2 ،1.5 a thousand pounds represents about 8.11% ،27.1% ، 26.4% ،14.5% ،4.7% ،41.2% ،5.1% each of them, respectively, and these items have variable costs without rent in total, which amounted to about 29.5 thousand pounds, representing about 76.6% of the total total costs, while the rental costs amounted to about 9 thousand pounds, representing about 23.3% of the total total costs of about 38.5 thousand pounds.

2-production and economic indicators: the production indicators showed that the average productivity of the onion crop has reached about 16.5 tons per acre, while the price of a ton of onion crop by sample reached about 4.93 thousand pounds.

The average total revenue received from the production of acres of onions was about 81.4 thousand pounds, while the net revenue received was about 82.9 thousand pounds, while the break-even point necessary to cover variable costs was estimated at about 7.8 tons/acre, while the ratio of revenue to costs was about 2.11%, while the profitability of the pound spent was about 1.11 pounds.

Fourth: routes, margins and marketing efficiency of the onion crop in the study sample:

1-marketing methods: The onion crop passes through several marketing channels and channels until it reaches the final consumer in the right form, place and time, and there are three marketing through which the onion crop passes, namely selling at the head of the field, selling to a wholesaler in the field, selling to a wholesaler in the market.In general, it cannot be judged that there is one of these marketing methods that is better than others, for example, selling in wholesale markets is a quick and effective way through which the product can get an appropriate price , but on the other hand, it requires the presence of the product in the cutting process, and selling at the head of the field to a wholesaler requires the presence of a wholesaler on the farm with the necessary packages, and bulk selling is the sale of the crop in the ground is a preferred method The producer who does not have marketing experience, in return, the product receives a low price, and this is the most common method of conservation, in which the producer bears the costs of cutting the crop, while the wholesaler bears the rest of the marketing functions, and the following marketing paths taken by the onion crop(3) are as follows as shown in Table No(8):

Table (3): production indicators of the onion crop in Egypt during the period from (2009-2022) area: thousand acres productivity: tons / acre production: thousand tons

year	Fully Mature (Single)			Fully Mature (Intercropped)			Onion Pickling			Onion seed (Buckseed)			Total		
	Area	**Yield**	**Prod.**	**Area**	**Yield**	**Prod.**	**Area**	**Yield**	**Prod.**	**Area**	**Yield**	**Prod.**	**Area**	**Yield**	**Prod.**
2009	115.3	13.6	1563.4	14.4	10.1	145.6	0.72	11	7.9	1.65	0.25	0.42	132.1	13	1717.2
2010	125.4	13.8	1731.8	10.3	9.6	99.5	0.5	11.5	5.8	1.37	0.25	0.34	137.6	13.4	1837.4
2011	123.5	14.3	1760.8	13.4	10.1	135.4	3.87	10.7	41.6	1.4	0.24	0.34	142.2	13.6	1938.1
2012	129.1	14.3	1851.9	11.9	9.6	114.7	0.83	10	8.3	1.41	0.24	0.35	143.2	13.8	1975.3
2013	117.2	15	1754.3	9.1	10.2	93.2	0.44	10	4.4	0.87	0.27	0.24	127.6	14.5	1852.1
2014	152.5	15	2294	13.6	10.6	144.4	1.03	11.5	11.8	1.49	0.28	0.41	168.6	14.5	2450.7
2015	183.9	14.6	2691.9	12.9	11.8	151.8	0.75	12	9	1.94	0.28	0.55	199.5	14.3	2853.3
2016	153.8	14.4	2218.8	9.1	10.9	98.9	0.8	11.3	9.3	1.57	0.4	0.63	165.2	14.1	2327.6
2017	180.6	16.4	2772.2	3.8	8.7	33.4	1.12	12	13.5	1.18	0.29	0.35	186.7	15.1	2819.4
2018	185.3	14.7	2729.2	9.6	10.5	136.7	0.5	11.5	5.8	0.85	0.45	0.38	196.3	14.6	2872.1
2019	190.6	15	2857.3	5.3	11.3	60.1	0.4	19	7.6	2.4	0.32	0.77	198.7	14.7	2925.8
2020	184.5	14.6	2693.9	4.8	10.3	49.8	0.38	18.5	7	1.17	0.39	0.45	190.9	14.4	2751.2
2021	227	14.8	3351.8	3.5	13.4	46.5	0.42	18	7.6	3.84	0.46	1.78	234.7	14.5	3407.7
2022	230.6	14.9	3438.3	7.6	9.1	68.9	0.4	17	6.8	4.82	0.55	2.64	243.4	14.45	3516.6
Average	**164.2**	**13.6**	**2407.8**	**9.2**	**10.5**	**98.5**	**0.87**	**13.142**	**10.4**	**1.85**	**0.33**	**0.69**	**176.2**	**14**	**1717.2**
growth rate%	**5.4**	**0.6**	**5.9**	**8.6-**		**7.6-**			**4.6**		**5.7**	**11.5**	**5.4**	**0.6**	**5.9**

Source: Collected and calculated from the Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Central Administration of Agricultural Economy, Winter Cultivation Statistics Bulletin, separate issues.

Table (4): the relative importance of the Republic's governorates for the area and production of onion crop in Egypt for the average period (2020/2022)

Governorates	Area (Fed.)	Yield (Ton/Fed.)	Prod. (Ton)	% Area from the Republic	% Prod. from the Republic
Alexandria	296.33	12.95	3836.33	0.13	0.12
Behera	13566.33	15.36	208426	6.08	6.46
Gharbia	49847.33	17.2	857263.33	22.35	26.58
Kafr-ElSheikh	6428.33	11.35	72965	2.88	2.26
Dakahlia	28949.67	14.24	412145.67	12.98	12.78
Damietta	2782.33	13.73	38209	1.25	1.18
Sharkia	20296.33	10.62	215609.33	9.1	6.69
Ismailia	572.67	13.85	7931.33	0.26	0.25
Port Said	82.33	6.19	509.67	0.04	0.02
Suez	622.67	13.5	8407.33	0.28	0.26
Menoufia	1248	13.54	16903	0.56	0.52
Qalyoubia	12162.33	15.01	182527	5.45	5.66
Cairo	3.33	5.3	17.67	0	0
Lower Egypt	**136858**	**14.79**	**2024750.67**	**61.37**	**62.78**
Giza	4003.67	11.77	47111	1.8	1.46
Beni Suef	16881.67	10.86	183394.33	7.57	5.69
Fayoum	11078.67	13.29	147237.67	4.97	4.57
Menia	4262.33	14.81	63117.67	1.91	1.96
Middle Egypt	**36226.33**	**12.17**	**440860.67**	**16.24**	**13.67**
Assuit	4252	16.11	68493.67	1.91	2.12
Suhag	18340.33	17.63	323278.33	8.22	10.02
Qena	3998.33	15.56	62197.67	1.79	1.93
Luxor	964	15.24	14687.33	0.43	0.46
Aswan	2383.33	11.72	27944	1.07	0.87
Upper Egypt	29938	16.59	496601	13.42	15.4
Inside the valley	203022.33	14.59	2962212.33	91.04	91.85
New valley	7046	7.78	54826.33	3.16	1.7
Matruh	747	10.34	7725.33	0.33	0.24
North Sinai	21	7.79	163.67	0.01	0.01
South Sinai	27	5.41	146	0.01	0
Noubaria	12140.33	16.48	200093	5.44	6.2
Outside the valley	**19981.33**	**13.16**	**262954.33**	**8.96**	**8.15**
Total	**223003.67**	**14.46**	**3225166.67**	**100**	**100**

Source: Collected and calculated from the Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Winter Cultivation Statistics Bulletin, separate issues.

Table (5): production indicators of onion crop in Gharbia governorate during the period from (2009-2022)

Year	Area (Fed.)	Yield (Ton/Fed.)	Prod. (Ton)
2009	27818	12.55	349112
2010	30368	13.83	420033
2011	35657	14.6	520621
2012	35416	13.33	471937
2013	35752	13.68	489254

2014	33281	15.05	500894
2015	46777	15.03	703060
2016	51789	14.89	771186
2017	39794	14.79	588509
2018	50399	16.11	812172
2019	51566	17.32	892904
2020	44027	15.99	704154
2021	52305	17.6	920540
2022	53210	17.8	947096
Average	42011.36	15.18	649390.9
growth rate%	7	2.3	5.9

Source: Collected and calculated from the Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Bulletin Statistics of Winter Cultivations, separate issues

Table (6) quantity and value of exports of fresh onions during the period from(2009-2022

Year	Fresh onions quantity	Value	Quantity of dried onion	Value	Conversion of dried onions to full maturity	Total quantity exported	Total value
	Thousand Ton	thousand dollars	Thousand Ton	thousand dollars	Thousand Ton	Thousand Ton	thousand dollars
2009	361.29	159693.59	16.46	35950.76	164.64	525.93	195644.35
2010	512.33	217054.81	18.98	30029.51	189.81	702.14	247084.32
2011	490.82	216692.41	21.87	35895.78	218.67	709.49	252588.20
2012	337.43	155272.70	28.58	33463.16	285.84	623.27	188735.86
2013	394.96	204511.54	25.56	25969.52	255.62	650.58	230481.06
2014	368.33	168540.97	29.71	34618.67	297.05	665.38	203159.64
2015	551.37	235284.28	19.93	32137.81	199.31	750.68	267422.10
2016	441.42	197273.28	12.44	29510.72	124.40	565.83	226783.99
2017	566.16	206243.25	14.95	35555.97	149.5	715.66	241799.22
2018	439.58	116340.26	13.22	31243.05	132.23	571.81	147583.31
2019	601.81	233933.67	11.90	29749.25	119.05	720.86	263682.92
2020	481.72	136513.92	15.16	40566.71	151.60	633.33	177080.63
2021	341.75	87671.88	33.73	52366.13	337.28	679.03	140038.00
2022	578.89	108976.62	23.78	36815.51	237.81	816.70	145792.13
Average	461.99	174571.66	20.447857	34562.325	204.48643	666.47786	209133.98
growth rate%	-4						-2.8

Source: Collected and computed from the Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Central Administration of Agricultural Economy, Bulletin of Foreign Trade Statistics,.

A-selling at the top of the field: the prices for each producer, wholesaler, and retailer amounted to about 4.75, 6.78, and 13.96 pounds each, respectively.

B-selling to a wholesaler on the farm: the prices for each producer, wholesaler, and retailer amounted to about 4.92, 6.92, and 13.96 pounds each, respectively.

Table (7): the relative importance of cost items and productive and economic indicators of the onion crop in the research sample in Al-Gharbia governorate for the agricultural season 2023/2022

Items		Unit	Quantity	price	Total	%	%
			number	pound	pound	the total of variable costs without rent	of the total variable rental costs
First: preparing the land for cultivation							
Plowing, crawling and planning			8	300	2400	8.11	
Second: Seeds, fertilizers and pesticides		kirat	2	4000	8000	27.10	20.77
Fertilisers	**nitrate**	Package	12	450	5400		
	phosphates	Package	6	280	1680		

	matchsticks	Package	2	350	700		
	total fertilizer				7780	26.36	20.20
	Grass	Liter	3	690	2070		
Pesticides	**Pests and diseases**	powder (kg(	4	555	2220		
	total pesticides				4290	14.53	11.14
Irrigation		irrigation	7	200	1400	4.74	3.63
	Seedlings (carat seedlings)	factor/day	12	150	1800		
	Agriculture	factor/day	12	150	1800		
	Hooting and scrubbing weeds	factor/day	15	150	2250		
	irrigation	factor/day	7	150	1050		
Employment	**Spreading and transporting fertilizers**	factor/day	7	150	1050		
	Spraying	factor/day	4	150	600		
	Resistance	factor/day	2	150	300		
	take off	factor/day	10	150	1500		
	Packaging	factor/day	6	300	1800		
	Total employment		75		12150	41.16	31.54
	human factor	factor/day	6	150	900		
Transport	**transportation car**	hour	2	300	600		
	Total transportation		83		1500	5.08	3.89
Total variable costs without rent					29520	100	76.64
annual rent		midterm	6		9000		23.36
Total rental costs		pound			38520		100
productivity indicators							
Productivity		tons/fed.	16.5				
Economic indicators							
Total revenue		pound	16.5	4933	81394.5		
net revenue					42874.5		
productivity at the break-even point		tons			7.81		
%Revenue to costs		%			2.11		
The profit of the spent pound		pound			1.11		

Net acre return = total revenue per acre in pounds – total costs per acre in pounds ; Total revenue / total costs = total revenue per acre in pounds / total costs per acre in pounds ; Profitability of the pound spent = net acre return in pounds / total costs per acre in pounds

Source: Collected and calculated from the data of the study sample.

C-selling to a wholesaler in the market: the prices for each producer, wholesaler, and retailer amounted to about 4.93, 6.99, and 13.96 pounds each, respectively.

- Marketing margins: the marketing margin is the difference between the retail price and the farm price and then includes the efficiency of marketing costs and the profits of intermediaries, and the marketing margin is calculated in an absolute form or in a relative form, where the absolute image expresses the marketing margins in monetary units, while the relative image expresses the absolute marketing margin attributed to the selling price as follows as shown in Table (8):

A-the marketing margin between the wholesaler and the producer of the onion crop : the average absolute marketing margin for the three tracts (wholesale – product) of the onion crop amounted to about 2052.33 pounds, that is, the average relative margin was about 29.38%.

B-the marketing margin between the retailer and the wholesaler of the onion crop: the average absolute marketing margin between (retail – wholesale) of the onion crop was about 6977.17 pounds, and the average relative margin was about 49.97%.

D – the marketing margin between the retailer and the producer of the onion crop the average absolute marketing margin between the (retailer-producer) of the onion crop was about 9029.5 pounds, that is, the average relative margin was about 64.67 %.

3-distribution of the consumer pound for the onion crop: the distribution of the consumer pound is one of the ways to identify marketing efficiency and is expressed in the absolute price difference of the marketing level divided by the retail price of the commodity. The concept of the consumer pound is expressed in the distribution of one pound paid by the consumer for the product and the marketing authorities concerned with the marketing of the commodity.

Reviewing the consumer pounds of the onion crop, the following is shown as shown.

A-the producer's share of the consumer pounds of the onion crop: reviewing the average producer's share of the onion crop for the three tracts in the study sample, it turned out that it amounted to about 35.33 piasters.

B-the wholesaler's share of the consumer's pounds for the onion crop: reviewing the average wholesaler's share, it turned out that it amounted to 14.7 piasters

D-the retailer's share of the pound consumed for the onion crop: reviewing the average retailer's share, it turned out that it amounted to about 49.7 piasters.

The share of intermediaries from the consumer pounds for the onion crop : reviewing the average share of intermediaries for the onion crop sample study, it turned out to be about 64.67 piastres.

2- Marketing efficiency: Therefore, technological efficiency works to reduce input costs (marketing costs), while price efficiency leads to an improvement in the movement of buying and selling and various economic aspects of marketing operations, where it becomes clear that the rise or fall of marketing costs alone is not evidence of the extent of efficiency with which the marketing device performs its functions, and high marketing efficiency may mean marketing functions, and then reduce the difference between the product price and the consumer price by reducing the share of intermediaries can also be performed The decrease in marketing efficiency leads to an increase in the total marketing costs and then an increase in the difference between the product price and the Consumer Price(2) marketing efficiency is measured as follows :

Reviewing the data of Table No. (13), it turns out that the cost of producing a ton of onions has reached about 2.34 thousand pounds, while the marketing costs per ton of onions amounted to about 9.03 thousand pounds, and the marketing efficiency of the onion crop in the research sample amounted to about 21.97%, which means a decrease in marketing efficiency as a result of the high share of marketing intermediaries, i.e. higher retail prices on the one hand and the lower price received by the product on the other hand, which means that there is a malfunction in the functions of the marketing apparatus must be addressed.

Table (8): product, wholesale and retail prices, routes, marketing margins and distribution of the consumer pound in the study sample in Al-Gharbia governorate

Statement			Marketing Tracts			
			On top of the field	Farm wholesaler	Wholesaler in the market	average
prices	Quantity	tons/fed.	16.5	16.5	16.5	16.5
	prices	product	4755	4924	5120	4933
		Total	6780	6920	7256	6985.33
		Retail	13962.50	13962.5	13962.5	13962.5
Marketing margins	Total - product	absolute(1)	2025	1996	2136	2052.33
		relative(2)	29.87	28.84	29.44	29.38
	Total - Retail	absolute(3)	7182.5	7042.5	6706.5	6977.17
		relative(4)	51.44	50.44	48.03	49.97
	Retail - Product	absolute(5)	9207.5	9038.5	8842.5	9029.5
		relative(6)	**65.94**	**64.73**	**63.33**	**64.67**
Consumer Pound Distribution*100		Product Share (7)	34.06	35.27	36.67	35.33
		Wholesale share(8)	14.50	14.30	15.30	14.70
		Retail share (9)	51.44	50.44	48.03	49.97
		Brokers' share (10)	65.94	64.73	63.33	64.67

(1) Wholesale - Product (Absolute) = Wholesale Price - Product Price
(2) Wholesale - Product (Relative) = (Wholesale Price - Product Price) / Wholesale Price *100
(3) Retail - Wholesale (Absolute) = Retail Price - Wholesale Price
(4) Retail - Wholesale (Relative) = (Retail Price - Wholesale Price) / Retail Price *100
(5) Retail - Product (Absolute) = Retail Price - Product Price
(6) Retail - Product Price (Relative) = (Retail Price - Product Price) / Retail Price *100
(7) Product Share = (Product Price) / (Retail Price) *100
(8) Wholesaler's Share = ((Wholesale Price) - (Product Price)) / (Retail Price) *100
(9) Retailer's share = ((retail price) - (wholesale price)) / (retail price) * 100
(10) Shares of intermediaries = (Wholesaler's share Retail share)

Source: Collected and calculated from the data of the research sample

Table (9): marketing efficiency of the onion crop in the study sample in Gharbia governorate

Statement	produced Quantity Tons/fed.	Production costs Fed. /pound	Production costs Tons / pound	Marketing Costs Tons / pound	% Marketing efficiency
	16.5	38517.5	2348.7	9029.75	21.97

$$\text{Marketing efficiency} = ((100 - (\text{Marketing costs} / \text{Marketing costs} + \text{Production costs})) * 100$$

Source: Collected and calculated from research sample data

Fifth: production and marketing problems of onion crop according to the opinions of farmers in the research sample in Gharbia governorate:

Reviewing the relative importance and its probability distribution of the production problems facing onion farmers according to the opinions of farmers in the research sample in Beheira governorate, it is shown from the results of the analysis contained in Table No. (10) below:

1. production problems: It turned out that the most important production problems of the onion crop and its probable distribution at a confidence level of 95% are the decrease in cultivated areas from previous years, which came at the forefront of the problems, as the number of repetitions of this problem reached about 77 farmers at a rate of about 96%, and the confidence period for the probability of the problem ranged between a minimum of about 92% and a maximum of about 100%, while 94% the confidence interval for the probability of the problem ranged from a minimum of about 88% to a maximum of about 99%, as came in third place reluctance The number of repetitions of this problem reached about 72 farmers with a percentage of about 90%, and the confidence period for the probability of the problem ranged from a minimum of about 83% to a maximum of about 97%, and the infection of pests and fungi, which affected the quantity produced, came in the rank, where the recurrence of the problem reached about 71 farmers with a percentage of about 89%, and the confidence period for the probability of the problem ranged from a minimum of about 82% to a maximum of about 96%, and production, especially organic fertilizers and pesticides, where the recurrence of the problem reached about 65 farmers with a rate of about 81%, and the confidence period for the probability of the problem ranged from a minimum of About 73% and a maximum of about 90%. The sixth place was taken by climate changes, which led to a decrease in productivity, where the recurrence of the problem reached about 58 farmers by about 73%, and the confidence period for the probability of the problem ranged from a minimum of about 63% to a maximum of about 82%.

The seventh place was taken by the storage of the crop by producers in anticipation of rising prices, where the recurrence of the problem reached about 46 farmers by about 56%, and the confidence period for the probability of the problem ranged from a minimum of about 45% to a maximum of about 67%.

2- Marketing problems: Reviewing the relative importance and probability distribution of marketing problems facing onion crop farmers according to the opinions of farmers in the research sample in Al-Gharbia governorate, it is clear from the results of the analysis provided in Table 14 that the most important marketing problems and their probability distribution at the level of 95% confidence, is the problem of producers being cheated by wholesalers in buying in the forefront of marketing problems, where the number of repetitions of this problem reached about 77 farmers with a percentage of about 96% and the confidence period for the probability of the problem occurring between a minimum of about 92% and the maximum reached about 100%, while in second place came the traders ' storage of onions in order to increase the price, as the number of repetitions of this problem reached About 75 farmers with a rate of about 94% and the confidence period for the probability of the problem ranged from a minimum of about 88% to a maximum of about 99%, and also came in third place the high percentage of marketing margins for wholesalers and a decrease in the share of the product, where the number of repetitions of this problem reached about 73 farmers with a rate of about 91% and the confidence period for the probability of the problem ranged from a minimum of about 85% to a maximum of about 97%, and the problem of opening the export door came in fourth place, where the number of repetitions about 70 farmers have this problem with a percentage of about 88%, and the confidence interval for the probability of the problem ranged from a minimum of about 80% to a maximum of about 95%, while The problem of the absence of Saiyan onion markets ranked fifth, where the number of repetitions of this problem reached about 45 farmers at a rate of about 56%. the confidence period for the probability of the problem ranged from a minimum of about 45% to a maximum of about 67%, while the problem of high transportation costs came in the last place, where the number of repetitions of this problem reached about 33 farmers at a rate of about 41% the confidence period for the probability of the problem ranged from a minimum of about 30% to a maximum of about 52%.

3- Problems related to consumer behavior: Reviewing the relative importance and probability distribution of problems related to consumer behavior according to the opinions of farmers in the research sample in Al-Gharbia governorate, the results of the analysis in Table 14 show that the most important problems and their probability distribution at the level of confidence of 95%, increased consumer demand for storage for fear of rising onion prices in the forefront of problems related to consumer behavior, where the number of repetitions of this problem reached about 70 farmers at a rate of about 88% and the confidence period for the probability of the problem occurred between a minimum of about 80% and a maximum of about 95%, while in second place came the problem of increasing the percentage of losses among the consumer as a result of poor storage when storing onions, where it amounted to The number of repetitions of this problem is about 65 farmers with a percentage of about 81%, and the confidence period for the probability of the problem ranged from a minimum of about 73% to a maximum of about 90%.

Table (10): problems related to the production and marketing side of the onion crop according to the opinions of producers and agricultural extension workers in the research sample in Egypt for the agricultural season 2022/2023

	Statement	Repetition No.	ratio %	Probability	Standard error 95 % conf	confidence interval upper	Lower
Problems related to the productive side							
1	Decrease in cultivated areas compared to previous years	77	96	0.96	0.04	1.00	0.92
2	Reluctance of farmers to cultivate it due to low prices of the previous year	72	90	0.90	0.07	0.97	0.83
3	Infection with pests and fungi that affected the quantity produced	71	89	0.89	0.07	0.96	0.82
4	High production costs, especially organic fertilizers and pesticides	65	81	0.81	0.09	0.90	0.73
5	High wages for labor and rental value	58	73	0.73	0.10	0.82	0.63
6	Climate changes that led to low productivity	45	56	0.56	0.11	0.67	0.45
7	Storage of the crop by producers in anticipation of rising prices	75	94	0.94	0.05	0.99	0.88
Problems related to the marketing side							
1	Traders store onions in order to increase the price	75	94	0.94	0.05	0.99	0.88
2	The high percentage of marketing margins for the wholesaler and the low share of the product	73	91	0.91	0.06	0.97	0.85
3	Producers were subjected to injustice by wholesalers in buying the crop	77	96	0.96	0.04	1.00	0.92
4	The absence of onions in the markets is what led to the lack of supply	45	56	0.56	0.11	0.67	0.45
5	Opening the door to export led to a lack of supply of onions in the local market	70	88	0.88	0.07	0.95	0.80
6	High transportation costs	33	41	0.41	0.11	0.52	0.30
	Problems related to consumer behavior		0	0.00	0.00	0.00	0.00
1	Increase consumer demand for storage for fear of rising onion prices	70	88	0.88	0.07	0.95	0.80
2	Increase the percentage of consumer losses as a result of poor storage when storing onions	65	81	0.81	0.09	0.90	0.73

Recommendations

1-the need to control the various marketing functions across the different stages of the commodity in order to reduce the marketing margins and the shares of both wholesalers and retailers to eliminate the greed of traders on the one hand, and the injustice that onion crop producers are exposed to on the other hand, especially with the high production costs, by developing marketing policies in line with the current stage that the country is going through.

2-activating the role of current marketing links and expanding their role in setting indicative prices for producers to sell their production so that they are not exposed to fraud in selling the crop.

3-the provisions of control inside and outside the markets, especially the wholesale markets, and the intensification of campaigns on the markets to eliminate the monopoly by wholesalers, which always makes the markets in case of unavailability of the commodity in sufficient quantity to make the markets hungry for additional quantities of the commodity.

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