AN ECONOMIC STUDY OF THE MARKETING WINDOWS OF THE EGYPTIAN POTATO CROP FOR THE MOST IMPORTANT FOREIGN MARKETS

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Abstract

This research was aimed to study the deals Market Windows Analysis to know the best marketing opportunities for exporting potatoes to the most important external markets, it was revealed through studying the development of economic variables to increase in the cultivated Potatoes area, productivity and production. This work was based on data which issued by the Ministry of Agriculture and Land Reclamation and The Central Agency for Public Mobilization and Statistics, foreign trade bulletins, separate numbers. The results showed that the marketing windows of the Egyptian potato crop and determine the available marketing windows and to know the ideal time period for exporting potatoes to the most important target.

Keywords: Market windows, cost of transportation and freight, price fluctuations, coefficient of variation, Gini Hirchman, competitive advantage, price advantage.

Introduction

Egyptian exports are considered one of the main sources of foreign exchange provision, especially in light of a deficit in the Egyptian trade balance, which amounted to about 51.3 billion dollars in 2018, while the rate of total Egyptian exports were coverage of total imports about 40.9% for the average period (2008-2018), where the total imports value about 52.79 billion dollars in 2008 and up to 80.53 billion dollars in 2018, increase about 52.5% compared to 2008, while the value of total exports increased by a small percentage not increase as the same as the total Egyptian imports value, it increased from 26.26 billion dollars in 2008 to 29.22 billion dollars in 2018, an increase of about 1 1.3% compared to 2008. While the value of agricultural imports increased from about $ 4.82 billion in 2008 to about $ 5.22 billion in 2018, an increase of about 8.4% compared to 2008, the value of agricultural exports increased from about $ 2.09 billion in 2008 to about 2.79 billion dollars in 2018, an increase of about 33.6% compared to 2008, and the value of agricultural exports declined from about 3.03 billion dollars in 2011 to about 2.79 billion dollars in 2018, with a decrease of about 234 million dollars, representing 7.7% of their value in 2011 (www.capmas.gov.eg) Agricultural foreign trade depends on achieving the goals of agricultural development on achieving the largest surplus in the production of agricultural crops and directing the surplus to export to foreign markets, achieving an increase in agricultural exports and a decrease in agricultural imports, and thus reducing the agricultural balance deficit.

Research problem : Agricultural foreign trade depends on achieving the goals of agricultural development on achieving the largest surplus in the production of agricultural crops and directing the surplus to export to foreign markets, achieving an increase in agricultural exports and a reduction in agricultural imports, thus reducing the agricultural balance deficit, The analysis of the marketing windows for external markets is considered somewhat important in knowing the optimal time period for exporting agricultural commodities to foreign markets, and Egypt is considered to have a competitive advantage in exporting Egyptian potatoes to foreign markets, hence the study of marketing windows analysis of the export potato crop is useful in determining the different marketing window opportunities and knowledge of the period The optimum time for exporting potatoes to foreign markets and achieving the greatest value from potato exports to these foreign markets. The total value of potato exports amounted to about 205.7 million dollars, while the total amount of exports of them amounted to about 724.7 thousand tons in 2018.

The problem of the study is knowing the optimal time period for exporting Egyptian potatoes to the most important foreign markets so that the largest possible amount of Egyptian potato exports to those foreign markets can be achieved, thus increasing the value of agricultural exports and limiting the increase in the gap in the Egyptian agricultural and commercial balance.

Aim of the research

This research aims to analyze the marketing windows for exporting potatoes to the most important foreign markets through a study.

Area, productivity, production and prices of potatoes during the period (2008-2018**).**

Trade balance of potato crop during the period (2008-2018).

Geographical distribution of potato crops to the most important foreign markets during the period (2008-2018). The best marketing opportunities for exporting potatoes to the most important external markets through Market Windows Analysis.

Material and Methods

The research relied on achieving its objectives on the method of descriptive statistical analysis and the use of some statistical analytical methods. The research also relied on the analysis of the market windows for the potato crop and the identification of opportunities for marketing windows to know the optimal time period for exporting potatoes to the

most important external markets. The research relied on the secondary data published in the periodicals. Bulletins issued by the Ministry of Agriculture and Land Reclamation, Central Agency for Public Mobilization and Statistics, Food and Agriculture Organization (FAO), website of the trade map, and some research, letters, studies, and scientific books that are relevant to the research topic have been used.

Results and Discussion

Through the results of the study we found that -

1. Expansion in the production of potato crop to ensure increased exported quantity then, increasing agricultural exports value.

2. Activating the role of specifications and quality standards for exporting potatoes to foreign markets to suit global competition.

3. Providing the necessary database for the producers with the required quantities, prices contractual arrangements and the minimum prices for foreign markets.

4. Necessary to do analysis of price fluctuations for the potato exports to the most important external markets based on supply and demand, considering other areas where better marketing windows are available.

First: The general trend of the study variables for the cocoa crop during the period (2008-2018):-

1-Evolution of area, productivity, production and prices of potatoes during the period (2008-2018):-

It was found through a study of the development of the cultivated area of the potato crop that it increased from about 327.4 thousand acre in 2008 to about 425.4 thousand acre in 2018, an increase representing about 29.2% of its value in 2008 - Table (1). With an estimate of the equation of the time trend of the development of the area planted with potato crops during the period (2008 - 2018), it turned out that it had taken a general, statistically significant trend of about 8.6 thousand acres, representing about 2.3% of the average study period of about 382.3 thousand acres - Table (2). While it was found through studying the acre productivity of the potato crop that it increased from about 10.9 tons in 2008 to about 11.4 tons in 2018, an increase representing about 4.3% of its quantity in 2008 - Table (1). By estimating the equation of the time trend of the evolution of the acre productivity of the potato crop during the study period, it was found that it has taken a general, significant, statistically significant trend of about 0.044 tons, representing about 0.4% of the average study period of about 11.2 tons - Table (2).

It was also found through studying the development of the quantity of potato production that it increased from about 3.6 million tons in 2008 to about 4.8 million tons in 2018, an increase representing about 35.6% of its quantity in 2008 - Table (1). With an estimate of the equation of the time trend of the evolution of the quantity of potato production during the period (2008 - 2018), it turned out that it had taken a general declining trend of statistical significance of about 0.11 million tons, representing about 2.6% of the average of about 4.3 million tons - Table (2).

While it was found from a study of the development of the farm price of potatoes, it increased from about 1022.5 EGP / ton in 2008 to about 2311.5 EGP / ton in 2018, an increase representing about 126.1% of its price in 2008 - Table (1). With an estimate of the equation of the time trend of the development of the cultivated price of potatoes during the period (2008 - 2018), it turned out that it has taken a general, significant, statistically significant trend of about 101.8 pounds / ton, representing about 7.2% of the average study period of about 1408.4 pounds / ton - Table (2). It was also found from a study of the development of the price of the potato total that it increased from about 1560 EGP / ton in 2008 to about 5560 EGP / ton in 2018, an increase representing about 256.4% of its price in 2008 - Table (1). With an estimate of the equation of the time trend of the evolution of the price of potatoes during the period (2008 - 2018), it turned out that it had taken a general, significant, statistically significant trend that amounted to about 326.8 pounds / ton, representing about 10% of the average study period of about 3255.5 EGP / ton - Table (2). While it was found from a study of the development of the potato retail price, it increased from about 2033.3 EGP / ton in 2008 to about 4060 EGP / ton in 2018, an increase representing about 247.2% of its price in 2008 - Table (1). With an estimate of the equation of the time trend for the development of the retail price of potatoes during the period (2008 - 2018), it turned out that it had taken a general, significant, statistically significant trend that amounted to about 467.1 EGP / ton, representing about 10.8% of the average study period of about 4316.2 EGP / Ton – table(2) While it was found from a study of the development of the quantity and value of potato exports that it increased, it took a growing general trend statistically, representing about 8.8%, 5.6%, respectively, of the average quantity and value of potato exports amounting to about 501.7 thousand tons, 200.6 million dollars, respectively.

Table 1 : Evolution of economic variables of potato crop in Egypt during the period (2008-2018).

Years	Area in thousand acres	Productivity Tons	Production in one million tons	The price of the product is EGP / ton	Wholesale pounds / ton price	Consumer price Pounds / ton	Export quantity thousand tons	Exports value in one million dollars
2008	327.4	10.89	3.57	1023	1560	2033	371.2	163.1
2009	329.7	11.10	3.66	1121	1960	2323	215.1	145.5
2010	334.6	10.86	3.63	1162	2348	2370	299.5	130.7
2011	390.8	11.10	4.34	1314	2643	3400	637.4	250.6
2012	421.9	11.28	4.76	1191	2421	4090	296.3	126.7
2013	381.4	11.18	4.27	1248	4500	5375	428.2	205.2

2014	409.5	11.26	4.61	1262	3280	4798	681.2	324.9
2015	393.1	11.10	4.36	1273	3250	4740	647.3	237.8
2016	376.6	10.92	4.11	1622	4400	5900	407.9	144.7
2017	414.9	11.67	4.84	1967	3890	5390	809.4	271.7
2018	425.4	11.37	4.84	2312	5560	7060	724.7	205.7
Average	382.3	11.2	4.3	1408.4	3255.5	4316.2	501.7	200.6

Estimated value*

Source: collected and calculated from:

1- Ministry of Agriculture and Land Reclamation, Central Administration of Agricultural Economics, Agricultural Statistics Bulletin, separate numbers
2- The website of the Central Agency for Public Mobilization and Statistics www.capmas.gov.eg
3- The Central Agency for Public Mobilization and Statistics, foreign trade bulletins, separate numbers

Table 2 : General time trend equations for the development of economic variables for the potato crop during the period (2000-2018).

Variable	Model	Annual average	growth rate	R^2	F
Area (Thousand acres)	$\hat{Y}_t = 330.54 + 8.627\,T$ (3.71) **	382.3	2.3	0.606	13.8**
Productivity (Tons)	$\hat{Y}_t = 10.89 + 0.044\,T$ (2.35) *	11.2	0.4	0.380	5.5*
Production (Million tons)	$\hat{Y}_t = 3.595 + 0.113\,T$ (3.7) **	4.3	2.6	0.604	13.7**
Agricultural price (Pounds / ton)	$\hat{Y}_t = 797.8 + 101.8\,T$ (4.79) **	1408.4	7.2	0.718	22.9**
Wholesale price (Pounds / ton)	$\hat{Y}_t = 1294.8 + 326.8\,T$ (5.68) **	3255.5	10.0	0.782	32.3**
Retail Price (pounds / ton)	$\hat{Y}_t = 1513.7 + 467.1\,T$ (9.14) **	4316.2	10.8	0.903	83.5**
Exports quantity by (Thousand tons)	$\hat{Y}_t = 235.8 + 44.32\,T$ (3.15) **	501.7	8.8	0.523	9.9**
Exports Value (Million dollars)	$\hat{Y}_t = 142.5 + 11.204\,T$ (2.17) *	200.6	5.6	0.343	4.7*

**significant at 0.0 1 *significant at 0.05

Source: collected and calculated from Table (1) in the study

It also shows from Table. (3) The multiplicity of foreign markets imported for Egyptian potatoes, the most important of which are Russian Federation, Italy, Greece, Lebanon, Germany, UAE, Kuwait, United Kingdom, Syria, Oman, Ukraine, Netherlands, Iraq, Qatar, Indonesia, Slovenia. And by studying the geographical distribution of the quantity of Egyptian potato exports in foreign markets during the average period (2008-2018), It turned out that the Russian Federation ranked first in the imports of Egyptian potatoes, with an average quantity of about 191.37 thousand tons, representing about 38.15% of the average total amount of Egyptian potato exports to foreign markets, which is about501.7 thousand tons during the average period (2008-2018). While Italy ranked second with about 58.46 thousand tons, representing about 11.65%, followed by Greece, Lebanon, Germany, Emirates, Kuwait, United Kingdom, Syria, Oman, Ukraine, Netherlands, Iraq, Qatar, Indonesia, Slovenia and then the rest of the other countries with rates that reached About 10.46%, 8.27%, 5.62%, 4.77%, 3.89%, 2.82%, 2.22%, 1.81%, 1.51%, 1.17%, 0.9%, 0.78%, 0.67%, 0.52%, 4.78%, respectively, of the total quantity Egyptian potato exports to foreign markets during the average period

(2008-2018). It also turned out that the average price of Egyptian potato export ranged between a minimum of about $ 285.7 / ton for Ukraine and an upper limit of about $ 599.1 / ton for Slovenia, while the average price of Egyptian potatoes exported was about $ 443.3 / ton during the average study period - Table (3).

The geographic concentration of the quantity and value of Egyptian exports of potatoes was calculated using the Gini-Hirschman coefficient, where the value of the index ranges between zero and the correct one. The closer the value of the coefficient approaches the correct one, this indicates the distribution of exports to a small number of external markets, but if its value is close From scratch, this indicates the expansion and diversification of commodity importing markets. Where it was found from Table (3) that the value of the geographic concentration factor for the quantity and value of Egyptian exports of the potato crop amounted to about 0.43, 0.42, respectively, thus the geographical concentration factor is relatively low, which reflects the multiplicity of foreign markets imported for the Egyptian potato crop during the average period (2008 – 2018).

Table 3 : Geographical distribution of exports potato to the most important foreign markets during the average period (2008-2018):

Country	quantity of exports potato (Thousand tons)	%	Value of exports potato (Million dollars)	%	Exports price (Dollars / ton)
United Russia	191.37	38.15	77.59	36.91	405.4
Italy	58.46	11.65	23.81	11.33	407.3
Greece	52.45	10.46	21.54	10.25	410.7
Lebanon	41.50	8.27	16.70	7.94	402.4
Germany	28.20	5.62	12.24	5.82	434.2
UAE	23.93	4.77	11.78	5.60	492.3
Kuwait	19.51	3.89	9.83	4.68	503.8
United kingdom	14.13	2.82	6.64	3.16	469.9
Syria	11.15	2.22	4.43	2.11	397.1
Amman	9.08	1.81	4.38	2.09	482.8
Ukraine	7.58	1.51	2.16	1.03	285.7
Holland	5.87	1.17	2.02	0.96	343.6
Iraq	4.51	0.90	1.77	0.84	392.9
Qatar	3.94	0.78	2.02	0.96	513.7
Indonesia	3.38	0.67	1.99	0.95	588.6
Slovenia	2.62	0.52	1.57	0.75	599.1
Other	24.0	4.78	9.8	4.64	406.5
Total	501.7	100	210.2	100	443.3
Coefficient of geographic concentration	0.43		0.42		

Source: collected and calculated from**:**
   1- The website of the Central Agency for Public Mobilization and Statistics www.capmas.gov.eg
   2- The Central Agency for Public Mobilization and Statistics, foreign trade bulletins, separate numbers

Second: Analysis of the marketing windows of Egyptian potato exports to the most important foreign markets:-

Marketing windows are determined by comparing the expected prices of producers with the expected production costs, and assuming that the expected prices are a means for wholesale prices in the target market and then adjusting the wholesale prices by the marketing margin to obtain estimates of the prices received by the producers, then adding a marketing margin estimated at about 15% (8), which is a phrase On the costs of transport and brokerage fees, as most of the previous studies assumed that the marketing margin is estimated at about 15% of wholesale prices, and the target markets were chosen based on the distance that separates them from Egypt to provide transportation advantages compared to the competing countries Russia's federal markets were chosen and, Italy, Greece, Germany, and the United Kingdom were chosen as target markets for Egyptian producers, as the quantity of Egyptian potatoes exported to these markets reached 344.6 thousand tons, representing 68.7% of the total Egyptian potato exports amounting to 501.7 thousand tons during the average period. (2008-2018), the market opportunity was defined as the period in which average prices exceed production, marketing costs, and transportation costs, and the marketing window analysis methodology was used by the following formula**:**

$$P - 15\% (P) > PC + TC$$

Where**:**

P = wholesale price per ton of potatoes
   15% (P) = marketing margins per ton of potatoes, where most of the previous studies assume that the average marketing margins amount to about 15%.

PC = production costs per ton of potatoes

$$*C_{jx} = 100\sqrt{\sum \frac{(X_{sj})^2}{(xj)^2}}$$

C_jx: represents the geographic concentration factor for the quantity and value of Egyptian potato exports.

X_sj: represents the quantity or value of Egyptian exports of potatoes destined for a specific country.

X_i: represents the total quantity or value of Egyptian exports of potatoes.

Criteria for evaluating Marketing Windows Analysis:

Analysis of marketing windows was evaluated in light of price fluctuations

High fluctuation = coefficient of variation ≥ 0.30

Average fluctuation = coefficient of difference between 0.15 and 0.29

Low fluctuation = coefficient of variation ≤ 0.15

It may appear through the results of the study in

High potential = production costs + transportation <lowest price for all months during the potato crop season.

Medium potential = production costs + transportation <the lowest price for all months, except for one or two months during the potato production season.

Low probability = production costs + transportation <the lowest price for only a few months during the potato season

Marketing windows analysis results:

Wholesale buyers expect during the months of potato production an increase in price fluctuations, however, marketing windows were found during the production season in the most important external markets, where the length of the marketing windows is greater if an average rise in the monthly wholesale price is assumed. In order to achieve the largest possible marketing windows for Egyptian potato exports, it is assumed that the average wholesale prices decrease or the production costs increase, and therefore the potential for a greater realization of the marketing windows of the potato crop in these target markets.

It is clear from Table No. (4) that the monthly wholesale prices per ton of potato crop in the Egyptian market ranged between a minimum of about $ 153.9 / ton during February, and a higher limit of about $ 587.6 / ton during October.

It was found that the average maritime freight prices for the potato crop amounted to about $ 100 / ton, while the margin of marketing profit for the shipping companies represented about 15% of the wholesale prices, so the cost of maritime shipping reached about $ 150 / ton, and then the export price Egyptian potatoes The minimum for these target markets is about 303.9 USD / ton during February, while the upper limit reached about 737.6 USD / ton during October - Table (4).

Table 4 : The development of monthly wholesale and export prices per ton of potato crop during 2018

Month	The monthly wholesale price of potatoes crop in the Egyptian market			Export price Dollars / ton
	pounds / kg	Pounds / ton	Dollars / ton	
January	3.25	3250	181.9	331.9
February	2.75	2750	153.9	303.9
March	3.00	3000	167.9	317.9
April	3.50	3500	195.9	345.9
May	4.00	4000	223.9	373.9
June	5.00	5000	279.8	429.8
July	5.00	5000	279.8	429.8
August	6.00	6000	335.8	485.8
September	8.50	8500	475.7	625.7
October	10.50	10500	587.6	737.6
Nov	9.50	9500	531.6	681.6
Dec	5.75	5750	321.8	471.8

Source: collected and calculated from the data of

1-he Central Agency for Public Mobilization and Statistics, the annual statistical book, various numbers.

2-he Central Agency for Public Mobilization and Statistics, the annual bulletin of prices of food products and services and services (producer / wholesale / consumer), various issues.

From the results the monthly market prices development of the potato crop, the most important target market, that Russia's federal market prices for the potato crop had reached a minimum of about $ 320 / ton during the months of October and November, while the highest level reached about $ 530 / ton during the month of July. The price fluctuations reached about 0.82, which indicates that it is a high value, where the coefficient of variation was about 0.18, which is less than 0.30.

It also turned out that the effect of the Russian Federation's price reduction on the price of potato crops had reached a minimum of about 262.3 dollars / ton during the months of October and November, while it reached a high of about 434.4 dollars / ton during the month of July - Table (5).

While it was found that the prices of the Italian market for potato crops had reached a minimum level of about 370 dollars / ton during May, while it reached a high level of about 530 dollars / ton during July. The price fluctuations reached about 0.89, which indicates that it is a high value, as the coefficient of variation is about 0.11, which is less than 0.30. It was also found that the impact of Italy's price reduction on the price of potato crops had reached a minimum of about $ 330.3 / ton during May, while it reached a high of about $ 473.1 / ton during the month of July - Table (5).

While it was found that the Greek market prices for potato crops had reached a minimum level of about 470 dollars / ton during the months of March and April, while the high level reached about 730 dollars / ton during August. The price fluctuations reached about 0.85, which indicates that it is a high value, where the coefficient of variation is about 0.15, which is less than 0.30. It was also found that the effect of the Greek price reduction on the price of potato crops had reached a minimum of about $ 399.9 / ton during the months of March and April, while it reached a maximum of $ 621.2 / ton during the month of August - Table (5).

While it was found that the prices of the German market for potato crops had reached a minimum level of about 365 dollars / ton during February, while the high level reached about 630 dollars / ton during July. The price fluctuations reached about 0.87, which indicates that it is a high value, where the coefficient of variation is about 0.13, which is less than 0.30. It was also found that the impact of Germany's price reduction on the price of potato crops had reached a minimum of about $ 319.1 / ton during February, while it reached a maximum of $ 550.8 / ton during July-Table (5).

While it was found that the UK market prices for potato crops had reached a minimum level of about $ 640 / ton during May, while a high level of about $ 1,000 / ton during January. The price fluctuations reached about 0.86, which indicates that it is a high value, as the coefficient of variation is about 0.14, which is less than 0.30. It was also found that the impact of the United Kingdom price reduction on the price of potato crops reached a minimum of about 550.7 USD / ton during May, while it reached an upper limit of about 860.5 USD / ton during January - Table (5).

Table 5 : The development of the monthly market prices for the potato crop, the most important target market during 2018.

Months	United kingdom			Germany			Greece			Italy			United Russia		
	The effect of price reduction USD / ton	USD / ton	USD / kg	The effect of price reduction Dollar / ton	USD / ton	USD / kg	The effect of price reduction USD / ton	USD / ton	USD / kg	The effect of price reduction USD / ton	USD / ton	USD / kg	The effect of price reduction USD / ton	USD / ton	USD / kg
January	860.5	1000	1.00	499.2	571	0.57	476.5	560	0.56	357.1	400	0.40	344.2	420	0.42
February	774.5	900	0.90	319.1	365	0.37	459.5	540	0.54	374.9	420	0.42	368.8	450	0.45
March	697.0	810	0.81	426.6	488	0.49	399.9	470	0.47	357.1	400	0.40	393.4	480	0.48
April	645.4	750	0.75	430.1	492	0.49	399.9	470	0.47	366.0	410	0.41	409.8	500	0.50
May	550.7	640	0.64	472.1	540	0.54	451.0	530	0.53	330.3	370	0.37	409.8	500	0.50
June	576.6	670	0.67	480.8	550	0.55	485.0	570	0.57	348.1	390	0.39	418.0	510	0.51
July	697.0	810	0.81	550.8	630	0.63	612.7	720	0.72	473.1	530	0.53	434.4	530	0.53
August	826.1	960	0.96	500.1	572	0.57	621.2	730	0.73	428.5	480	0.48	360.6	440	0.44
September	714.2	830	0.83	487.8	558	0.56	561.6	660	0.66	392.8	440	0.44	295.0	360	0.36
October	740.1	860	0.86	445.9	510	0.51	510.6	600	0.60	383.8	430	0.43	262.3	320	0.32
Nov	851.9	990	0.99	445.0	509	0.51	493.5	580	0.58	401.7	450	0.45	262.3	320	0.32
Dec	800.3	930	0.93	511.4	585	0.59	578.6	680	0.68	437.4	490	0.49	278.6	340	0.34
Minimum	550.7			319.1			399.9			330.3			262.3		
Price fluctuations	0.86			0.87			0.85			0.89			0.82		
standard deviation	118.0			66.8			88.3			46.6			77.7		
The average	845.8			530.8			592.5			434.2			430.8		
Coefficient of variation	0.14			0.13			0.15			0.11			0.18		

Source: collected and calculated from the data of Table No. (4) by research**.**

Potato crop price fluctuations turned out to be moderate for marketing windows for the Russian Federation market, the variation coefficient of the potato crop is about 0.18. It also showed that the relationship between the price of the Russian Federation and the export price of the Egyptian potato crop extends during the period from January to July only and the number of competitors in this period is less because of the high price of potatoes in the Russian Federation market, while the rest of the year from August to December There are no export opportunities for the presence of a large number of competitors within the Russian market, in addition to the increase in the price of Egyptian potato exports from the Russian market - Figure (1).

Potato crop price fluctuations turned out to be weak for the market windows of the Italian market, As the difference coefficient of the potato crop was about 0.11. It was also revealed that the relationship between the price of Italy and the Egyptian potato crop export price extends from January to April and during July only, and the number of competitors in this period is less because of the high price of potatoes in the Italian market, while the rest of the year during the months of May and June, and during The months from August to December there are no export opportunities for the presence of a large number of competitors within the Italian market in addition to the increase in the Egyptian potato export price above the Italian market price - Figure (2).

It turns out that the fluctuations in potato prices were moderate for the marketing windows of the Greek market, as the difference coefficient of the potato crop was about 0.15.

It was also found that the relationship between the price of Greece and the price of export of the Egyptian potato crop extends from January to August only and the number of competitors in this period is less due to the high price of potatoes in the Greek market. As for the rest of the year from September to December, there is no Export opportunities for the presence of a large number of competitors within the Greek market, in addition to the increase in the Egyptian potato export price above the Greek market price - Figure (3).

It turns out that the fluctuations in the prices of potato crops were weak for the marketing windows of the German market, Where the coefficient of variation of the potato crop was about 0.13. It was also found that the relationship between the price of Germany and the price of export of the Egyptian potato crop extends from January to August only, and the number of competitors in this period is less due to the high price of potatoes in the German market. As for the rest of the year from September to December, there is no Export opportunities for the presence of a large number of competitors within the German market, in addition to the increase in the Egyptian potato export price above the German market price - Figure (4).

It turns out that the fluctuations in the price of potato crops were weak, For marketing windows to the UK market, the potato variation coefficient is around 0.14. It was also found that the relationship between the United Kingdom price and the Egyptian potato crop export price extends throughout the year and the number of competitors in this

period is less due to the high price of potatoes in the United Kingdom market and the decrease in the Egyptian potato export price than the English market - Figure (5).
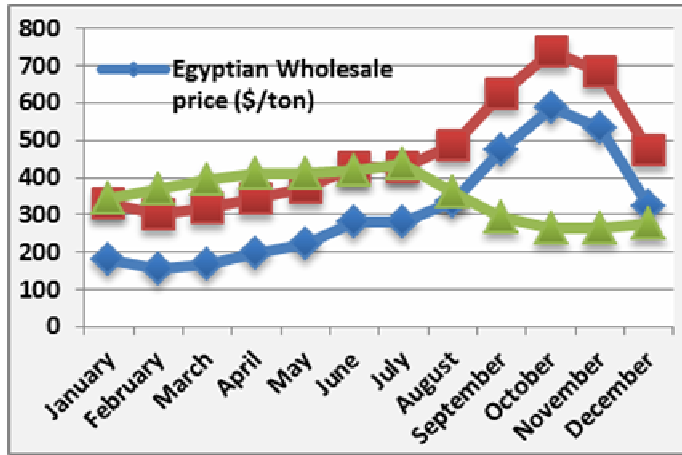

Fig. 1 : Analysis of the marketing windows of the Egyptian potato crop in the Russian Federation market in 2018
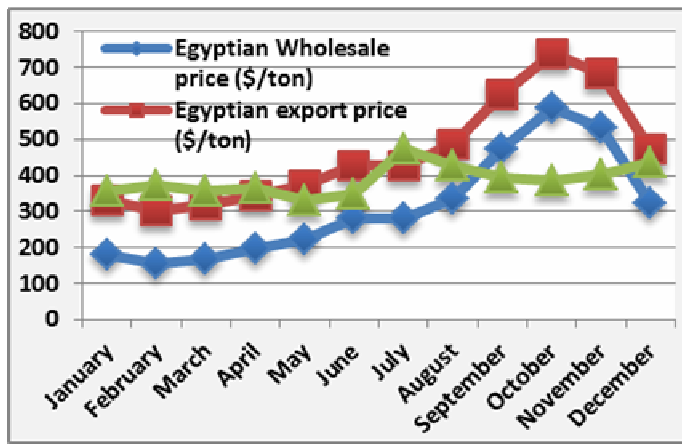

Fig. 2 : Analysis of the marketing windows of the Egyptian potato crop in Italy's markets in 2018
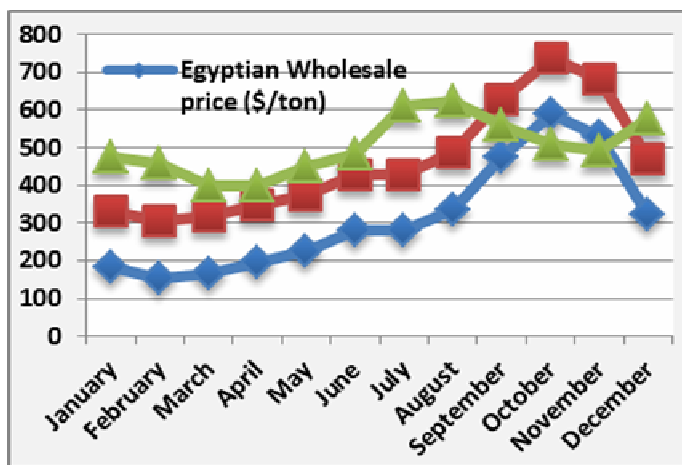

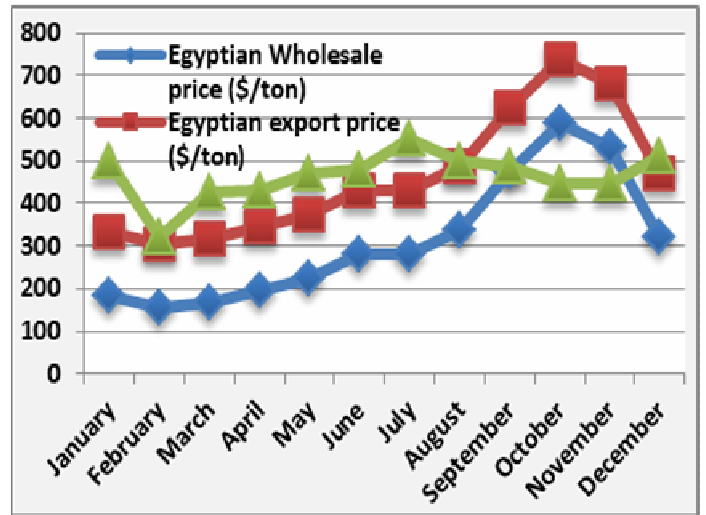**Fig. 3 :** Analysis of the marketing windows of the Egyptian potato crop in Greece markets in 2018

Fig. 4 : Analysis of the marketing windows of the Egyptian potato crop in Germany market in 2018
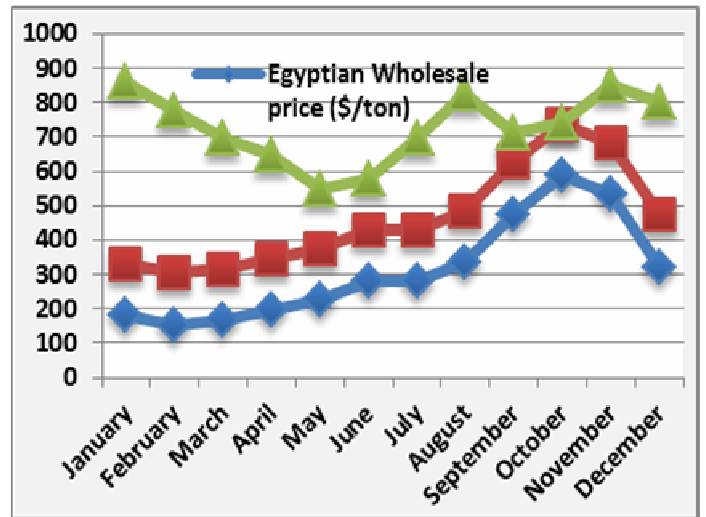

Fig. 5 : Analysis of the marketing windows of the Egyptian potato crop in the UK market in 2018

Shipping and transportation cost

It was found that there is an advantage for the transportation costs of Egypt in exporting the potato crop to the target markets compared to the competing countries, as Egypt achieved lower transportation and freight costs than the transportation costs of the targeted markets during the summer and winter seasons - Table No. (6), and the decrease in the transportation costs of these target markets may be due to the presence of companies Shipping within those markets, where it was found that the costs of production and transportation for the potato crop amounted to about 194 dollars / ton. The possibility of achieving marketing windows to export potatoes to the targeted markets during their production seasons has been verified, as it was found that production costs in addition to transportation costs <the lowest price, for all months during the season of potato crop production - Table No. (7).

Table 6 : Analysis of marketing windows for exporting potatoes to the most important foreign markets during 2018

States	Marketing windows period during the winter months		Marketing windows period during the summer months		Price fluctuations	The possibility of achieving marketing windows during the production season		The advantages of transportation cost from Egypt compared to the target market	
	High price	low price	High price	low price	-	Summer	Winter	Summer	Winter
United Russia	2	4	3	3	High (0.82)	Medium	High	√	√
Italia	2	4	5	1	High (0.89)	Low	High	√	√
Greece	1	5	2	4	High (0.85)	High	High	√	√
Germany	1	5	2	4	High (0.87)	High	High	√	√
United kingdom	0	6	1	5	High (0.86)	High	High	√	√

Source: collected and calculated from the data of Table No. (5) in the study

Table 7 : The extent to which marketing windows can be achieved for the most important external markets during the potato crop season during 2018:

States	Production costs US $ / ton	The transportation costs are USD / ton	(Production + transport costs) Dollars / ton	Greater or less	The lowest price$/T
United Russia	94	100	194	>	262.3
Italia	94	100	194	>	330.3
Greece	94	100	194	>	399.9
Germany	94	100	194	>	319.1
United kingdom	94	100	194	>	550.7

Source: collected and calculated from the data of Table No. (5) in the study.

The results showed that Egypt has a comparative advantage in the cultivation and production of potato crops, as the total cultivated area of the potato crop reached about 425.4 thousand acres, representing about 4.6% of the total cultivated area in Egypt, which amounts to about 9228 thousand acres in 2018, while the total domestic production of potatoes reached about 4.84 million tons While the total domestic consumption was about 4.11 million tons, while the percentage of self-sufficiency in potatoes was about 117.6%, and the amount of exports of potatoes reached about 724.7 thousand tons, representing about 13.4% of the total amount of agricultural exports amounting to about 5.4 million tons in 2018.

The analysis of the marketing windows for foreign markets is considered somewhat important in knowing the optimal time period for exporting agricultural commodities to foreign markets, and Egypt is considered to have a competitive advantage in exporting potatoes to foreign markets, and there for a study of marketing windows analysis of the export potato crop is useful in determining the different marketing window opportunities and knowing the time period Ideal for exporting to foreign markets and achieving the most value from exports to foreign markets.

The research deals with analyzing the marketing windows of the potato crop for the most important external markets, identifying the most important potential and targeted external markets for each crop based on consumer demand of the commodity, and defining the opportunity of marketing windows as the period in which average prices exceed production, marketing and shipping costs.

Conclusion

The results showed that the relationship between the target market prices and the Egyptian potato crop export price extends from January to July only for the Russian Federation market, and from January to April for the Italian

market, and from January to August for Greece and Germany.

Acknowledgements

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