



Economic feasibility of production and marketing under the greenhouse system in light of project of 100 thousand greenhouses (Case study of cherry tomato crop)

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Abstract: Greenhouse agriculture technology is considered one of the most important applications of modern technologies that contribute to increasing agricultural production, The research problem is summarized in the imbalance between the supply and demand sides of agricultural crops, especially with the limited land resources and the increase in irrigation and water needs, in addition to the worsening of the population problem, which aimed to identify the feasibility of producing cherry tomatoes for the purpose of export or local marketing under greenhouses. and studying the development of greenhouse numbers in Egypt, it is seen that it has taken an increasing trend with an annual growth rate of about 5.14% of the average number of greenhouses during the period (2004-2017). It is concerned with the development of greenhouse production during the period referred to, as production has taken an increasing trend with an annual growth rate estimated at 3.96% of the average greenhouse production for the study period. With an estimate of some indicators of the economic evaluation of the production of cherry tomatoes under the greenhouse, it was found that: the break-even point for the production destined for the domestic market is estimated at 6.1 tons / greenhouse, and with an estimate of the price safety limit for the production destined for export amounted to about 71.1%, which means that each product will still achieve profits even if the export prices decrease by 71.1%, but in the case of production Directed to the local market, the price safety limit reached 27.2%. Which indicates that the cherry tomato product under the greenhouse will still achieve profits until the local market prices decrease by 27.1%, and it becomes clear that the most important import markets for cherry tomatoes are the markets of Saudi Arabia, Russia, Kuwait, followed by the markets of the Emirates, the Netherlands, then Qatar, where they represent These markets collectively account for 97.4% of the total Egyptian exports of cherry tomatoes during the year 2017-2018, which indicates a concentration in the Egyptian export markets among a limited number of countries.

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1. Introduction:

There is no doubt that the adoption of modern technology methods and technical innovations is one of the most important ways of agricultural sector development. The protected agriculture technology is considered one of the most important applications of these technologies where it contribute to increasing agricultural production by increasing the unit productivity of the cultivated area, it also helps to provision the water and cultivate high-quality varieties compatible with the export requirements, addition to maximizing the return from the land and water unit, creating more employment opportunities. And these increasing the volume of exports of vegetables and fruits, and contribute to advancing economic development.

Protected agriculture technology was applied in Egypt during the 1970s. In the eighties, the Ministry of Agriculture adopted work to Disseminate and popularize that technology through the availability of the necessary information ⁽¹⁾, preparing technical bulletins and training programs.

Tomato is one of the most crops that can be grown in greenhouses, especially tomatoes cherry, which is produced for export. The amount of tomatoes cherry exported in 2017/2018⁽⁵⁾ about 3.22 thousand tons.

Traditional production methods can't provide a variety with high quality, so the trend towards modern

methods and techniques in agriculture, through cultivation under the greenhouse of various kinds besides plastic tunnels became the solution. But what is the effectiveness of agricultural technology under the greenhouse in increasing agricultural production from some vegetables, especially the tomato cherry crop and increasing its ability to penetrate foreign markets and its contribution to exports development, especially under the limited resources?

So the objective of the research is to identify the feasibility of producing cherry tomatoes under greenhouses, for the purpose of exporting or local marketing through studying the economic and marketing feasibility of establishing greenhouses in light of the 100 thousand greenhouses and agricultural strategy 2030 project.

2. Methodology and Sources of Data:

The research methods relied on a descriptive and quantitative analysis, in addition to using some statistical methods such as estimating the general time trend, The averages and the relative of the most important economic variables in question in addition to some indicators of economic evaluation represented in the evidence of profitability (the return of the pound invested) and the criterion of the ratio of benefits to costs, and the application of some criteria for

measuring productive risk such as break-even point and price safety limit.

The research relied upon on the primary data obtained through a questionnaire designed to achieve the goal of the research (case study), and a secondary data from some government agencies such as the Economic Affairs Sector, the General Administration for Greenhouses, and Land and Water Research Institute.

3. Results and discussion:

First: relative importance of the value of a greenhouse production:

By studying the relative importance of the crops value produced under greenhouses from the value of agricultural production, the data of Table No. (1) indicated that the average value of vegetables under greenhouses amounted to 532 million pounds ⁽⁶⁾, representing about 1.65%, 0.28%, 0.16% of the total value of Vegetable production, value of total plant production and value of the total agricultural production, respectively, estimated at 32.32, 191.48 and 346.47 billion pounds, respectively, as an average for the period (2013-2017), reflecting the need to focus on the production of vegetables under greenhouse system and the need to expand in this production.

Table No. (1): relative importance of the value greenhouse production from the value of agricultural production During the period (2013-2017) (value: million pounds)

year	value of greenhouse vegetable production	Total value of vegetable production	Relative importance (%)	value of plant production	Relative importance (%)	value of agricultural production	Relative importance (%)
2013	476	30628	1.56	165027	0.29	282434	0.17
2014	530	31762	1.67	170953	0.31	305414	0.17
2015	510	32341	1.58	175517	0.29	318332	0.16
2016	562	32372	1.74	190595	0.29	356958	0.16
2017	583	34470	1.69	255327	0.23	469202	0.12
Average	532	32315	1.65	191484	0.28	346468	0.16

Source: collected and calculated from data: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Income Bulletin, various issues, 2013:2017.

Second: development of numbers, area and production of greenhouses (winter vegetables) during the period (2004-2017):

Table No. (2) Shows the development of greenhouse numbers during the period (2004-2017) ⁽³⁾. The greenhouses ranged between a minimum of about 25 thousand greenhouses in 2004 and a maximum of about 64 thousand greenhouses in 2014 and an average of 45 thousand greenhouses during that period, Estimates of the time trend equation for the total number of greenhouses in Table No. (3) indicate that it has taken an statistically increasing trend, with

an annual growth rate of about 5.14% of the average number of greenhouses during the period under study.

Table No. (2) Shows also that the greenhouse area ranged between a minimum of 10.27 million square meters in 2004, equivalent to 2445 acres, And a maximum amounted about 23.80 million square meters in 2011, equivalent to 5,666 acres, 2012, and with a general average of 17.90 million square meters during that period, equivalent to 4,262 acres, time trend equation for the total greenhouse area shown in Table No. (3) Indicates that this area has taken an statistically increasing trend, with an annual growth

rate estimated at 4.08% of the average greenhouse area for the study period.

As for the development of greenhouse production during the aforementioned period, It turns out from data of Table No. (2) that this production ranged between a minimum about of 96.07 thousand tons in 2004 and a maximum about of 265.25 thousand tons

in 2014, and a general average of 187.12 thousand tons during that period, time trend equation for total greenhouse production, which is illustrated in Table No. (3), indicates that it has taken a significant increasing trend with an annual growth rate estimated at 3.96% of the average greenhouse production for the study period.

Table No. (2): Development of numbers, area and production of greenhouses (winter vegetables) during the period (2004-2017)

Statement Year	Greenhouse number (Thousand greenhouse)	area (million m ²)	production (1000 ton)
2004	25	10.27	96.07
2005	32	12.18	125.39
2006	34	13.38	143.16
2007	36	15.53	193.37
2008	39	19.95	225.46
2009	34	13.58	156.16
2010	44	17.83	175.58
2011	55	23.80	200.59
2012	55	23.80	200.59
2013	62	20.37	236.77
2014	64	21.83	265.25
2015	50	19.55	213.35
2016	49	19.97	195.78
2017	52	18.53	192.08
Average	45	17.90	187.12

Source: collected and calculated from data: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Income Bulletin, various issues, 2004:2017.

Table No. (3): Results of time trend equations for the numbers, area and production of greenhouses (winter vegetables) during the period (2004-2017)

Variable	Equation	T test	R ²	% Change rate
Greenhouse number (1000)	$\hat{Y}_t = 27.73 + 2.32 X_t$	4.77**	0.65	5.14
Area (Million M ²)	$\hat{Y}_t = 12.43 + 0.73 X_t$	3.51**	0.51	4.08
Production (1000 ton)	$\hat{Y}_t = 131.53 + 7.41 X_t$	3.29**	0.48	3.96

(**) level of significance 0.01.

Source: Collected and calculated from the data of Table No. (2).

Third: Geographical distribution of numbers, area and production of greenhouses (winter vegetables) at the governorate level:

Studying the distribution of greenhouse crops at the governorates level as an average for the period (2013-2017), the results indicated in table No. (4) that:

Dakahlia Governorate comes at the forefront of the governorates in terms of the total number of greenhouses, which amounted about 24 thousand greenhouses, representing about 43.21% of the total number of greenhouses in the republic, which amounts to about 55.28 thousand, And an area of about 7.30 million m² represents about 36.39% of the total

greenhouse area at the level of the Republic, which is about 20.05 million m², and production amounted to about 73.92 thousand tons, representing about 33.50% of the total greenhouse production at the level of the Republic, which is about 220.65 thousand tons.

Giza Governorate comes in the second place with a total number of greenhouses amounted to about 6.65 thousand greenhouses, which represents about 12.02%, and an area of about 2.49 million m², and production amounted to about 33.74 thousand tons.

Followed by Nubaria in the third place with a total number of greenhouses amounting to about 5.06 thousand greenhouses, representing about 9.15 % Of

the total number of greenhouses in the Republic and an area of about 2.53 million m², production amounted to about 35.92 thousand tons.

Followed by each of the governorates of Gharbia and Ismailia in relatively close numbers, representing about 7.59%, 6.97% for each of them, while the rest of the other Governorates ranges between the relative importance of the number of greenhouses with Between 0.01% and 3.64% of the total number of greenhouses at the republic level is quantified Medium for the period (2013-2017).

The use of the cubic plastic greenhouse system on an area of 4200 m² is considered the best for

efficient utilization of the space as much as possible and reducing the percentage of unexploited land represented by the interstitial distances between the greenhouse, which is estimated at 200 m², in addition to the use of labor, agricultural machinery and supplies with higher efficiency in the larger areas, and from here we find that the process of constructing greenhouses depends on both fixed and variable production elements, and this will be handled in the next part to judge them in terms of economic feasibility.

Table No. (4): Geographical distribution of numbers, area and production of greenhouses (winter vegetables) at the governorate level as an average for the period (2013-2017) (Area: 1000 m², production: tons)

Statement Governorate	Average (2013-2017)			Relative importance (%)		
	No of Greenhouse	Area	Production	No of Greenhouse	Area	Production
Dakahlia	23885	7297	73920	43.21	36.39	33.50
Giza	6646	2485	33739	12.02	12.39	15.29
Nubaria	5060	2530	35924	9.15	12.62	16.28
Gharbia	4197	1145	10959	7.59	5.71	4.97
Ismailia	3854	1528	16267	6.97	7.62	7.37
Damietta	2015	757	4489	3.64	3.77	2.03
Suez	1880	674	4027	3.40	3.36	1.83
Sharqia	1646	891	10328	2.98	4.44	4.68
Menoufia	1231	357	2979	2.23	1.78	1.35
Beheira	984	848	16698	1.78	4.23	7.57
other	3883	1541	11316	7.02	7.68	5.13
total	55280	20053	220646	100	100	100

Source: collected and calculated from: the Ministry of Agriculture and Reclamation Land - Economic Affairs Sector - Bulletin of Economics Agricultural - various issues, 2013:2017.

Fourth: Technical and economic indicators of the cherry tomato crop produced under the greenhouse system:

1- Total costs of the greenhouse:

A-Greenhouse investment costs:

It should be noted that studying the investment costs of any activity is one of the main determinants of entering into any project. From this standpoint, the investment costs are considered one of the main determinants of investment for under greenhouses, which is one of the methods used in greenhouses, In this regard, it turns out from the data of Table No. (5) that the total cost of greenhouse over an area of 4200 m amounted to about 252.8 thousand pounds for greenhouse, Distributed to each of the iron structure, whose cost is about 175 thousand pounds, representing about 69.2% of the total cost of constructing the greenhouse, at a cost per square meter of iron structure amounted to 41.6 pounds per meter, as for plastics and anti-virus kink, the data indicate that they amounted to about 47.25, 9.6 thousand pounds for greenhouse, each of them respectively, representing about 18.7%, 3.8%

of the total cost of establishing the greenhouse, with an estimated value of 11.25, 2.3 pounds per square meter, respectively, also, the cost of both the irrigation network and the irrigation motor reached about 17.5, 3.5 thousand pounds, at a cost per square meter, which amounted to 4.17, 0.83 pounds per meter, representing about 6.9%, 1.4% of the total greenhouse cost for each of them, respectively.

The data also indicates that the total investment costs per ton produced amounted to 1341.1 pounds. The highest investment costs for the iron structure about 700 pounds per ton, while the lowest investment cost amounted to about 14 pounds per ton for the irrigation motor, It is noted that both the iron structure and the plastic used in greenhouse construction are among the most influential inputs to greenhouse construction, as they alone represent about 87.9% of the total investment cost of greenhouse construction, indicating the severity of their influence in making the investment decision in the field of agriculture using greenhouses.

B- Production costs:

Study of production costs is a great importance because of its influence in decision-making, especially if the choice is between cultivate in a greenhouse for export or for local marketing. From this standpoint, the field results are shown in Table No. (6) for estimating the production costs of greenhouses. For an area of 4200 meters, which amounted to an average of about 238.8 thousand pounds, where the cost of supplies and operating materials was estimated at 115.1 thousand pounds, representing about 48% of the total production cost, while the cost of labor was estimated at about 95 thousand pounds for greenhouses, which represents about 39.6%. As for the cost of fertilizers, field results indicate that they averaged about 30.5 thousand pounds, representing 12.7% of the total production costs, As well the cost of pesticides under greenhouses amounted to about 29.4 thousand pounds, of relative importance, which

amounted to about 12.3% of the total production costs. 33.9% of the cost of production requirements amounting to about 27.4 pounds per square meter and about 16.3% of the total cost of production per square meter, As for the cost of irrigation and electricity, it turned out to be about 0.88 pounds per meter, which represents about 1.5% of the total cost of producing a meter. Also, the cost of both clamps and thread per square meter under the greenhouse amounted to about 0.52, 3.3 pounds / meter, representing about 0.9%, 5.8% of The total cost of production per square meter for each of them, respectively, While the Technical management, service workers and packing workers estimated their cost at about 5.7, 19.05, 3.6 pounds per square meter, with relative importance, respectively, each amounting to about 10%, 33.4%, 6.3% of the total cost of producing a square meter of the cherry tomato crop under greenhouses.

Table No. (5): The relative importance of the investment costs clauses to establish the greenhouse on an area of 4200 m² (value: pounds)

Item	cost of greenhouse	Relative importance (%)	cost per (m ²)	cost per unit produced (Tons)
Steel structure	175000	69.2	41.67	700.0
Plastic	47250	18.7	11.25	378.0
Antivirus Kink	9625	3.8	2.29	77.0
Irrigation water network	17500	6.9	4.17	140.0
Irrigation motor	3500	1.4	0.83	14.0
Machinery and spray equipment	4018		0.96	32.1
total cost of building Greenhouse	252875	100.0	60.21	1309.0
Total investment costs	256893	-	61.17	1341.1

Source: Collected and calculated from field collection data.

Table No. (6): Production costs per square meter of the cherry tomato crop under greenhouse (Greenhouse area of 4200 m²) (Value: pounds)

Input	Cost of Greenhouse	Cost per (m ²)	Relative importance (%)	Cost per unit of production (ton)
Seedlings	39000	9.29	16.26	1560
cost of irrigation water from electricity	3700	0.88	1.54	148
Maintenance	2000	0.48	0.83	80
Technical management	24000	5.71	10.01	960
Tomato clips	2200	0.52	0.92	88
string	14000	3.33	5.84	560
Technical workers	80000	19.05	33.36	3200
Packing workers	15000	3.57	6.26	600
Fertilizers	30480	7.26	12.71	1219
Pesticides	29410	7.00	12.26	1176
Total	239790	57.09	100.00	9592

Source: Collected and calculated from field collection data.

2- Revenue:

Field results in Table No. (7) show that the greenhouse production of the cherry tomato crop for the production season (8 months,3 months of the growing and 5 months of the harvest) reached about

25 tons and about 5.95 kg per meter, It was also found from field interviews that production destined to export was estimated at about 76%, while the remaining portion destined to the local market amounted to about 24%. Also, it appeared from the

field study that the export price of cherry tomatoes amounted to about 45 thousand pounds per ton, While the local market price reached an average of about 15 thousand pounds per ton, which indicates that the export price is equivalent to 3 times the local price, and this means that total revenue generated from the export of greenhouse amounted to about 855 thousand pounds, While the total revenue resulting from the sale

directed to the local market amounted to about 90 thousand pounds which means that the total return, amounted to about 945 thousand pounds, in addition to that the revenue achieved from export and local marketing per square meter reached About 204, 21.4 pounds per square meter, with a total return estimated at 225 pounds per square meter.

Table No. (7): production value and yield of the cherry tomato crop produced under greenhouse area of 4200 m² (Value: pounds)

Unit	amount of production in tons	Production distribution		Production value		Annual costs	Return	Domestic price	Export price
		export in tons	Local in tons	Export	local				
greenhouse is 4200 m ²	25	19	6	855000	90000	272881	945000	15000	45000
m ²	5.95	4.52	1.43	204	21.43	64.97	225	15.0	45

Source: Collected and calculated from field collection data.

Fifth: Economic efficiency indicators:

Economic evaluation indicators are used to judge the feasibility of projects ⁽²⁾, and from this standpoint, some economic evaluation indicators will be estimated, which are (net return, return on investment and profitability of the pound) to judge the feasibility of investment in protected agriculture projects (production of cherry tomatoes under the greenhouse). In this regard, the economic evaluation indicators shown in Table No. (8) obtained according to field data, showed the following:

A- Average price: average selling price per ton of cherry tomatoes destined to export is around 45,000

pounds, while the price of a ton of cherry tomatoes destined to the local market is about 15,000 pounds, also average greenhouse productivity of cherry tomatoes is about 25 tons / greenhouse, (19 tons of which are destined to export and 6 tons for the local market), with total revenue estimated at 94.5 thousand pounds.

B - Productive costs: The total production costs are estimated at about 272.9 thousand pounds for greenhouse, the variable costs of which represent about 87.9%, while what is related to the annual depreciation of fixed assets represents the remaining percentage (12.1%).

Table No. (8): Results of estimating the indicators of economic evaluation of cherry tomatoes under greenhouse for both production for export and production for local marketing

Indicator	external market	local market
Selling price (pounds / ton)	45000	15000
Quantity sold to external market (tons)	19	0
Domestic sale price (EGP / ton)	15000	15000
Quantity sold to local market (tons)	6	25
Total revenue of greenhouse (EGP)	945000	375000
Total revenue (pounds / ton)	37800	15000
Annual depreciation (EGP / ton)	758.6	758.6
Variable cost (EGP / ton)	9592	9592
Total costs (EGP / ton)	10350	10350
Net return (EGP / ton)	27450	4650
Net return (% of revenue)	72.6	31.0
Margin over variable costs (EGP / ton)	28208	5408
Return on investment (%)	265.2	44.9
Profitability of kilogram (EGP / kilogram)	27.4	4.6

Source: Collected and calculated from field collection data.

C - Export-oriented production: The weighted total revenue is estimated at the export price and the local market for export-oriented production is about 37.8 thousand pounds per ton, while the total costs are estimated at about 10.35 thousand pounds per ton, and accordingly the net return per ton is about 27.4

thousand pounds per ton, That is, 72.6% of the total revenue per ton, while the margin over the variable costs (the total revenue minus the variable costs) is estimated at 28.2 thousand pounds per ton.

D - Production directed to the local market: The total revenue of cherry tomatoes destined for the

local market is estimated at about 15 thousand pounds per ton ⁽⁴⁾, while the total costs are estimated at about 10.35 thousand pounds per ton, Accordingly, the net return per ton is about 4.6 thousand pounds per ton, equivalent to 31% of the total revenue per ton, a decrease of about 22.8 thousand pounds compared to the net return of cherry tomatoes destined for export, while the margin is estimated above the variable costs (total revenue minus the variable costs) for production Directed to the local market by about 5.4 thousand pounds per ton, a decrease of about 22.8 thousand pounds from the margin above the variable costs of production directed to export.

E - Return on investment: The rate of return for cost amounted to about 265.2% for production destined to export, and accordingly, the return on the pound invested (unit return from cost) in the production of cherry tomatoes is estimated in the case study at about 264.2; that is, each spent monetary unit achieves a return estimated at about 265.2 pounds, This means higher production efficiency for the production of exported cherry tomatoes, due to the higher return on the invested pound compared to the opportunity cost of production (interest rate). While the rate of return for costs for production directed to the local market was about 44.9%, that is, the return on the pound invested (unit revenue from costs) in the production of cherry tomatoes in the case study is estimated at 43.9, meaning that each spent monetary unit achieves an estimated return of 44.9 pounds, This means higher production efficiency for the production of cherry tomatoes destined to the local market, due to the higher return on the invested pound compared to the opportunity cost of production (interest rate).

Sixth: Standards for Measuring Productive Risk:

The measurement of productive risk illustrated in some evaluation criteria like, the break-even point and the price safety limit. As it shown in Table No. (9):

(A) Break-even point: It must be noted that the break-even point was calculated using the contribution-return method, and through the results of the analysis, the break-even point (the volume of equal production) is estimated at 1.17 tons / greenhouse for the production destined to export, while the break-even point for the production directed to the local market is about 6.1 tons/ Greenhouse, This volume reflects the lowest level of production that can be allowed to use the production capacity, and at this level of production the total revenue is equal to the total costs. (Equal revenue) By estimating the value of the parity revenue, it is evident that both production for export and production for the local market have achieved greater returns than the parity point for revenue, Also, both the export-oriented production and the production destined for the local market must be sold for a value of no less than about 44.3 and 91.8 thousand pounds / greenhouses for each of them respectively, so that the production costs can be covered only (no profit or loss).

(B) Price safety limit: results show that the price safety limit for the production destined to export amounted to about 71.1%, which means that each product will still achieve profits even if export prices have decreased by 71.1%, and this means that the capacity of the cherry tomato farmer is below the greenhouse for export due to its sensitivity to lower than selling prices, In the case of production directed to the local market, the price safety limit reached about 27.2%, which indicates that the cherry tomato product under the greenhouse will still achieve profits until the local market prices decrease by 27.2%, despite the low price security limit for the local market compared to the external market except The ability of the local product is more sensitive to lower selling prices for the local market than the selling price to the foreign market.

Table No. (9): Results of estimating some criteria for measuring risk for both production for export and production for local marketing of cherry tomatoes produced under greenhouses

Indicator	Foreign market	local market
Fixed cost of the season in (EGP)	33091.1	33091.1
variable cost of greenhouse	239790.0	239790
Productivity (tons / greenhouse)	25	25
Variable cost per ton	9591.6	9591.6
Average selling price of the market in EGP per ton	37800	15000
production Equalizer (ton)	1.173	6.1
Revenue Equalizer (EGP)	44342.9	91777.0
Total production cost (EGP)	272881.1	272881.1
Total production cost per ton	10915.2	10915.2
Production cost of break-even point	12804.6	66784.5
Break-even price	10915.2	10915.2
Price safety limit %	71.1	27.2

Source: Collected and calculated from field collection data.

Seventh: current situation of Egyptian exports of cherry tomatoes and export dates:

In this part, the current situation of external marketing of the cherry tomato crop will be studied based on two axes, the first of which deals with the study of the geographical distribution of Egyptian exports of cherry tomatoes, while the second axis deals with the export dates and the relative importance of the monthly market share thereof during 2017/2018 (Due to the lack of sufficient data and statistics on the exports of cherry tomatoes, the year 2017/2018 was sufficient).

1- Geographical distribution of Egyptian exports from cherry tomatoes:

By studying the geographical distribution of Egyptian exports of cherry tomatoes during the year 2017/2018, which illustrated in Table No. (10), It turns out the total quantity exported from them amounted to about 3.22 thousand tons, distributed among a group of major markets, foremost among which are Arab markets, which account for Approximately 80.26% of the value of Egyptian cherry tomato exports during 2017/2018, while the rest is distributed over other markets.

The same table data also indicates that the Egyptian cherry tomato exports are the most important markets for the export of cherry tomatoes in Saudi Arabia, Russia and Kuwait, followed by the UAE, Netherlands and Qatar markets, where these markets together account for about 97.4% of the total Egyptian exports of cherry tomatoes during 2017/2018, This indicates that there is a concentration in the Egyptian export markets between a limited number of countries. And the Saudi market accounts for about 1.95

thousand tons, which represents about 60.39%, followed by the Russian market with an amount of exports of about 357.2 tons, representing about 11.08%, followed by the markets of Kuwait and the UAE, where the amount of exports is about 304.8 tons, 211.9 tons, representing about 9.45% 6.57% each.

2- Export dates and the relative importance of the monthly market share of Egyptian exports of cherry tomatoes:

Data shown in Table No. (10) indicates that the export season for cherry tomatoes represents all months of the year, but the amount of exports decreases during three months, which are August, September and October, as it is clear from the same table that the most export month for cherry tomatoes is December, where its exports represent 24.16% of the total exports of the crop during 2017/2018, It is followed by the months of March, April, and May with relatively close proportions, which are 13.11%, 13.45%, 14.33%, respectively, This also turns out that there are markets that import throughout the months of the year, such as the Saudi market, as there are markets that import during eleven months, such as the Emirates market, while there are markets that import during seven months of the year, such as the Kuwaiti market, while there are markets that import within 6 months of the year just like the Russian market, There are also markets that are imported during only 4 months of the year, such as the Dutch market and the Qatar market. This is due to competition from the exporting markets of cherry tomatoes at the world level.

Table No. (10) The geographical distribution of Egyptian exports of cherry tomatoes and the relative importance of the monthly market share of their exports during 2017/2018 (Quantity: tons)

Statement Country	January	February	March	April	May	Jun	July	August	September	October	November	December	total	%
Saudi	71.1	126.9	226.4	316.9	373.1	106.8	116.6	12.2	64.6	39.5	176.1	316.8	1947.0	60.39
Russia	--	15.2	68.3	99.0	87.5	--	--	--	--	--	14.6	72.6	357.2	11.08
Kuwait	7.3	10.6	11.1	2.5	--	--	1.1	--	--	--	2.4	269.9	304.8	9.45
Emirates	0.4	36.0	4.2	3.2	1.2	--	0.6	0.1	1.3	1.6	97.9	65.6	211.9	6.57
Netherlands	64.2	36.0	47.7	--	--	--	--	--	--	--	--	47.5	195.4	6.06
Qatar	19.3	38.8	56.4	9.7	--	--	--	--	--	--	--	--	124.1	3.85
Other	13.7	16.8	8.4	2.4	0.3	29.8	0.0	0.4	0.1	3.4	1.9	6.7	83.8	2.60
Total	175.9	280.2	422.5	433.6	462.0	136.6	118.3	12.6	66.0	44.5	292.9	779.1	3224.2	100.00
%	5.45	8.69	13.11	13.45	14.33	4.24	3.67	0.39	2.05	1.38	9.08	24.16	100.00	--

Source: Collected and calculated from: Ministry of Agriculture and Land Reclamation - Central Administration of Agricultural Quarantine - Unpublished data, 2017/2018.

Recommendations:

In light of the findings of the research, the following can be recommended:

1- The contribution of government banks, the Ministry of Social Solidarity, and specialized banks such as the Egyptian Agricultural Bank in lending to young people the necessary financing and simple interest to stimulate investment in the field of protected agriculture.

2- Attention to cultivating seeds, seeds and seedlings suitable for cultivation under the greenhouse in order to produce good and desirable varieties in the greenhouses in greenhouses.

3- Preparing centers and stations for preparing, sorting, grading, packing and transporting Equipped that contributes to raising the quality of the crops produced under the greenhouse, and then improving the competitive capabilities of those crops inside the foreign markets.

4- Opening and establishing distribution outlets related to greenhouse products.

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