An Economic Study of Olive Crop in North Sinai Governorate

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ABSTRACT

The study gives an interest to the production of olive crop in North Sinai Governorate. It, also, cares to identify the productivity and the production in North Sinai Governorate. It is shown that the cultivated area of olive crop in Sinai Governorate has reached to about 37.82 thousand feddans, at a relative importance reaches to about 18.65% of the total of the cultivated area of olive, which reaches to about 201.74 thousand feddans, in the State in 2013. Also, it is shown that North Sinai Governorate contributes to the total production by about 56.83 thousand tons, at a relative importance reaches to about 10.1% of the total production of olive at the level of the State that reaches to about 563.07 thousand tons. Moreover, it is turned out that the Governorate suffers from a relative insufficiency for the productivity per feddan compared to the State. Nubaria Governorate is shown to occupy the first place in terms of space by about 37.7 thousand feddans and an amount of production estimated at 143.8 thousand tons. In addition, it is turned out that the cultivated area of olive crop in North Sinai Governorate, during the period (2000-2013), has ranged from a minimum reached to about 12.1 thousand feddans in 2000, which represents about 71.37% of the average of the period that reached to 18.25 thousand feddans, and a maximum reached to about 27.82 thousand feddans, representing about 164.1% of the average of the period under study.

Furthermore, the productivity of olive crop per feddan in North Sinai Governorate, during the period (2000-2013), has ranged from a minimum, reached to about 1.5 tons in 2010, which represents about 57.6% of the period's average that reached to about 2.63 tons, and a maximum reached to about 3.88 tons in (2008), representing about 149.2% of the average of the period under study. It is shown that the production of olive crop per feddan in North Sinai Governorate, during the period (2000-2013), has ranged from a minimum, reached to about 14.58 thousand tons in 2007, which represents about 35.2% of the period's average that reached to 41.3 thousand tons, and a maximum reached to about 61.7 thousand tons in (2013), representing about 149.5% of the average of the period under study. It is turned out that the area of the most important centers cultivated of olive in Rafah center has ranged from a minimum, reached to about 0.88 thousand feddans in 2007, which represents about 5.5% of the total area of centers during the same year and a maximum reached to about 10.9 thousand feddans in 2013, representing about 28.8% of the total cultivated area of those centers for the same year. In addition, it is shown that the cultivated areas in the centers of Al-Arish, Bear Al-Abd and Al-Sheikh Zuwyed has reached to about 7.7 thousand feddans and 5.6 thousand feddans, respectively in 2013, which represent about 20.4%, 16.1% and 14.9% of the total cultivated areas in those centers in North Sinai Governorate for 2013. It has been turned out that the production of olive crop per feddan in North Sinai Governorate, during the period (2000-2013), has ranged from a minimum, reached to about 14.58 thousand tons in 2007, which represents about 35.2% of the period's average that reached to 41.3 thousand tons, and a maximum reached to about 61.7 thousand tons in (2013), representing about 149.5% of the average of the period under study. While an insufficiency in the productivity per feddan has been shown during the most of the years of study, except for (2001, 2002, 2003, 2004, 2005, 2008, 2009), a relative superiority has been achieved for the productivity per feddan in North Sinai Governorate compared to the State. Also, the relative insufficiency of the productivity per feddan, for the average of the period (2000-2013), is shown at a rate reached to 69.36%. This insufficiency is due to the reliance of this Governorate on rains as a main source of irrigation, which affects on the reduction of the productivity per feddan in this Governorate compared to the Republic that depends on more stable sources of irrigation for irrigating the crop. In addition, the fluctuation of the relative importance of olive crop production in North Sinai Governorate is shown for the Republic during study period.

Key words: Economic Study, Olive crop, production, North Sinai

Introduction

Egypt has a competitive advantage in producing olive and olive oil because of its relatively stable climate and its commercial site which is distinctive for the areas of producing the crop, especially it occupies the eighth place in the global ranking of the countries producing olive and the third place among the countries producing table olive, as it contributes by about 11.5% of world production. Moreover, olive oil industry and pickling olives are considered transformational food industries that aim at increasing the added value of olives. The crop is planted for the purpose of producing olive by 10%, and about 90% are for pickling. Olive has a lot

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of economic and nutritional benefits, as olives are used in extracting oil or they are used as table olive in the form of green or black pickled olives. In addition, olives have a high nutritional value, as each 100 grams of green olives contain (144) calories, 13.5 grams of fats, 4 grams of carbohydrates, 5.8 grams of water, 1.5 grams of protein and 1.5 grams of fiber, in addition to 420 units of vitamin A and some mineral elements (such as phosphorus, calcium and iron). Olive oil is the fastest oil in digestion and the richest oil of vitamins, mineral salts and fatty acids. Furthermore, the use of olive oil results in protecting human from atherosclerosis, reducing the ratio of blood cholesterol, lowering blood pressure, activating liver and treating digestive diseases. Some of olive's local kinds are (Al-Balady – Al-Teffahi – Al-Ajeezy), and its imported kinds are (Al-Shammlaly – Frantoyo – Negeral – Kronaky). Kinds for pickling are such as (Shamlano – Askolano – Kalamata – Dulcy), and the kinds that have double purpose are such as (Al-Manzanello – Mission – Ferdal – Bicol). The most important kinds which are common in South Sinai are (Al-Teffahi – Kronaky – Kalamata – Dulcy – Manzanello – Bicol – Al-Azizi – Al-Meloky).

The cultivated area of olive crop in North Sinai Governorate reaches to about 37.82 thousand feddans, at a relative importance reaches to about 18.65% of the total area cultivated of olive, in the Republic, reaching to about 201.74 thousand feddans in 2013. In addition, it is turned out that North Sinai Governorate contributes to the total production by about 56.83 thousand tons, at a relative importance reaches to about 10.1% of the total production of olive at the level of Republic that reaches to about 563.07 thousand tons. It is shown that the Governorate suffers from a relative insufficiency for the productivity per feddan, compared to the Republic, at a ratio reached to about 11.21% for the same year. Moreover, it has been turned out that Nubaria Governorate occupies the first place in terms of area, as it reaches to about 37.7 thousand feddans, and it gives an amount of production estimated at about 143.8 thousand tons. Nubaria Governorate is followed in order by North Sinai Governorate that has an area estimated at about 43.5 thousand feddans and an amount of production estimated at about 56.8 thousand tons. Then, Matrouh Governorate that has an area estimated at about 28.9 thousand feddans and an amount of production estimated at about 56.2 thousand tons. Matrouh Governorate is followed by the Governorates of Ismailia, Fayoum, South Sinai, Cairo and Giza that have areas estimated at about 19.6, 14.9,13.9, 9.9 and 5.6 thousand feddans, respectively, and production estimated at about 85.2, 68.7, 14.7, 3.8 and 35.5 thousand tons, respectively.

Research Problem: -

Olive crop is one of the most important crops that yield a huge profit for farms in North Sinai Governorate, as it considered one of the sources of agricultural income. But the low productivity in this Governorate was shown, compared to the Republic. This is due to lowering the average of production per feddan and some factors, relating to the use of production requirements of the crop, which affects the net return of farmers, and results in declining farm income and thus declining the national income.

Objectives of Research: -

1- Identifying the current status of olive crop at the level of the Republic and North Sinai Governorate.
2- Identifying the productivity determinates of olive crop in both the Republic and North Sinai Governorate.
3- Analyzing the factors that affect the production of olive in North Sinai Governorate.
4- Estimating the relative importance of the area and the productivity of the crop, and estimating the rate of the relative change at the level of the Republic and North Sinai Governorate.

Method of Research: -

The study is based on the descriptive and quantitative analysis by using some economic indicators, other descriptive metrics and general trend equations, and analyzing the simple association and regression. Moreover, the study has depended on the published and unpublished data of the Ministry of agriculture – Economic Affairs Sector – bulletins of agricultural economics, the Central Agency for Public Mobilization and Statistics, Center of Information and Decision-making in the Department of Agriculture in North Sinai and the Statistical Yearbook, various issues.

The Most Important Results: -

The cultivated area of olive crop in North Sinai Governorate reaches to about 37.82 thousand feddans, at a relative importance reaches to about 18.65% of the total area cultivated of olive, in the Republic, reaching to about 201.74 thousand feddans in 2013. In addition, it is turned out that North Sinai Governorate contributes to the total production by about 56.83 thousand tons, at a relative importance reached to about 10.1% of the total production of olive at the level of Republic that reaches to about 563.07 thousand tons. It has been shown that the Governorate suffers from a relative insufficiency for the productivity per feddan, compared to the Republic, at a ratio reached to about 11.21% for the same year. In addition, table No (1) shows that Nubaria governorate occupies the first place in terms of area, as it reaches to about 37.7 thousand feddans, and it gives an amount of production estimated at about 143.8 thousand tons. Nubaria governorate is followed in order by North Sinai governorate that has an area estimated at about 43.5 thousand feddans and an amount of production estimated at about 56.8 thousand tons. Then, Matrouh governorate that has an area estimated at about 28.9 thousand feddans

and an amount of production estimated at about 56.2 thousand tons. Matrouh governorate is followed by the governorates of Ismailia, Fayoum, South Sinai, Cairo and Giza that have areas estimated at about 19.6, 14.9, 13.9, 9.9 and 5.6 thousand feddans, respectively, and production estimated at about 85.2, 68.7, 14.7, 3.8 and 35.5 thousand tons, respectively.

Table 1. Shows the total and fruitful area, the productivity and production of olive crop at the level of the Republic for (2012).

Area / feddan – productivity / ton – production / ton				
Governorate	Total Area	Fruitful Area	Productivity	Production
Nubaria	37739	19440	7.4	143856
Matrouh	28960	21867	2.57	56286
North Sinai	43468	24864	2.28	56839
Ismailia	19571	12906	6.6	85257
Fayoum	14891	14980	4.6	68747
South Sinai	13860	9661	1.5	14714
Cairo	9908	5720	067.	3844
Giza	5650	5620	6.3	35540

Source: - Ministry of Agriculture – and Land Reclamation, Economic Affairs Sector, Bulletin of Agricultural Economics, 2013

Also, table No (2) shows the evolution of the cultivated area of olive crop in the Arab Republic of Egypt during the period (2000-2013). The area has ranged from a minimum reached to about 108.3 thousand feddans in 2000, representing about 77.2% of the average of the period which reached to about 140.12 thousand feddans, and a maximum reached to about 202.7 thousand feddans, representing about 144% of the average of the period under study. The percentage of increase for both of the upper limits and the average of the period of the cultivated area has reached to about 187.2% and 129.3%, respectively, for the base year (2000) during the same period.

Table 2. The Evolution of the Area, Productivity and Total Production of olive crop in the Arab Republic of Egypt for the Period (2000/2013)

Years	Area		Productivity		Production	
	Thousand Feddans	Standard	Tons	Standard	Thousand Tons	Standard
2000	108.32	100	3.84	100	281.75	100
2001	113.89	105014	3.80	98.95	293.91	104.31
2002	117.89	108.83	4.19	109.11	182.02	64.60
2003	118.70	109.58	2.61	67.96	204.72	72.66
2004	116.82	107.84	3.89	101.30	315.19	11.86
2005	118.38	109.28	3.25	84.63	314.45	111.60
2006	125.37	115.74	5.03	130.98	544.64	193.30
2007	135.69	125.26	4.58	119.27	507.05	179.96
2008	150.32	138.77	4.37	113.80	480.07	170.38
2009	149.30	137.83	3.4	88.54	507.6	180.15
2010	148.30	136.90	3.2	83.33	336.1	119.29
2011	168.0	155.09	3.5	91.14	588.0	208.69
2012	188.3	173.83	3.9	101.56	487.1	172.88
2013	202.74	187.16	4.1	106.77	563.07	199.84
Average	140.12	129.35	3.83	99.73	400.38	135.10

Source: - Ministry of Agriculture – and Land Reclamation, Economic Affairs Sector, Bulletin of Agricultural Economics, various issues

In addition, table No (3) shows the results of estimating the general trend equations of olive's area in the Republic during study period that they have taken an increasing general trend which is statistically significant. They have reached to about 6.53 thousand feddans that is equivalent to the percentage of about 4.6% of the average of olive's area, in the Republic, which reached to about 140.12 thousand feddans.

Table No (2) shows the evolution of olive's crop productivity, per feddan, in the Arab Republic of Egypt during the period (2000-2013). The productivity has ranged from a minimum reached to about 2.6 tons in 2003, representing about 68.06% of the average of the period which reached to about 3.82 tons, and a maximum reached to about 5.03 tons, in (2006), representing about 131.33% of the average of the period under study. The percentage of increase for both of the upper limits and the average of the period of productivity per feddan has reached to about 132.3% and 99.7%, respectively, for the standard year (2000) during the same period. Also, table No (3) shows the results of estimating the general trend equations of olive's productivity in the Republic during study period that they have taken an increasing general trend which is statistically significant. They have reached to about 0.006 tons that is equivalent to the percentage of about 0.17% of the average of olive's productivity, in the Republic, which reached to about 3.8 tons.

The evolution of the total production of olive crop in north Sinai governorate: -

Table No (4) shows the evolution of olive's crop production, per feddan, in the Arab Republic of Egypt during the period (2000-2013). The production has ranged from a minimum reached to about 182 thousand tons in

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2002, representing about 45.4% of the average of the period which reached to about 400.4 thousand tons, and a maximum reached to about 363.1 thousand tons, in (2013), representing about 140.6% of the average of the period under study. The percentage of increase for both of the upper limits and the average of the period of production has reached to about 199.8% and 142.2%, respectively, for the base year (2000) during the same period. Also, table No (3) shows the results of estimating the general trend equations of olive's production in the Republic during study period that they have taken an increasing general trend which is statistically significant. They have reached to about 25.8 thousand tons that is equivalent to the percentage of about 4.46% of the average of olive's production, in the Republic, which reached to about 400.98 thousand tons.

Table 3. The General Trend Equations of the Evolution of the Area, Productivity and Total Production of Olive Crop in the Arab Republic of Egypt for the Period (2000/2013)

Statement	General Trend Equation	R^2	F	Average	Rate of Change %	Significance
Area (thousand feddans)	$\hat{Y}h = 91.141 + 6.53 X1h$ (8.906)	0.31	**(79.32)	140.12	4.66	**
Productivity (tons)	$\hat{Y}h = 3.78 + 0.0062 X1h$ (0.146)	0.02	*(0.022)	3.83	0.17	*
Production (tons)	$\hat{Y}h = 206.27 + 25.88 X1h$ (4.34)	0.57	**(18.86)	400.38	4.46	**

Source: - collected and calculated from Table (2).
Yh = the estimated value of the area in the year I . Xi = variable time, (I) 1, 2 .... 14 ,. A , B= Indicates to reduce hard, and the regression coefficient of the equation, respectively.(**) Indicates a significant regression model or when the level of significance (0.01).
(*) Refers to the moral at the level of significance (0.05).
(- 2)
R   =average coefficient of determination. (F) = F value calculated

Table No (4) shows the evolution of the cultivated area of olive crop in North Sinai Governorate during the period (2000-2013). The area has ranged from a minimum reached to about 12.1 thousand feddans in 2000, representing about 66.30% of the average of the period which reached to about 18.25 thousand feddans, and a maximum reached to about 28.31 thousand feddans, representing about 164.1% of the average of the period under study. The percentage of increase for both of the upper limits and the average of the period of the cultivated area has reached to about 233.96 % and 150.8 %, respectively, for the base year (2000) during the same period. In addition, table No (5) shows the results of estimating the general trend equations of the cultivated area of olive in North Sinai Governorate during study period that they have taken an increasing general trend which is statistically significant. They have reached to about 1.22 thousand feddans that is equivalent to the percentage of about 6.67% of the average of olive's area, in North Sinai Governorate, which reached to about 18.25 thousand feddans.

Table 4. The evolution of the area, productivity and total production of olive crop in the Arab Republic of Egypt for the period (2000/2013)

Years	Area		Productivity		Production	
	Thousand Feddans	Standard	Tons	Standard	Thousand Tons	Standard
2000	12.10	100	2.81	100	26.99	100
2001	12.53	103.55	2.96	105.33	29.33	108.66
2002	12.97	107.19	3.10	110.32	31.99	118.52
2003	13.39	110.66	2.17	77.22	36.29	134.45
2004	13.84	114.38	3.06	108.89	33.23	123.11
2005	14.25	117.76	3.34	118.86	37.62	139.38
2006	14.61	120.74	3.44	122.41	39.87	147.72
2007	15.96	131.90	1.24	44.12	14.58	54.02
2008	28.31	233.96	3.88	138.07	46.54	172.43
2009	22.11	182.72	2.50	88.02	55.27	204.77
2010	22.14	182.97	1.5	52.81	33.10	122.63
2011	20.57	170.00	2.25	80.07	46.28	171.47
2012	24.85	205.37	2.28	81.13	56.83	210.55
2013	27.82	229.91	2.22	79.00	61.76	228.82
Average	18.25	150.8	2.63	93.3	39.26	145.47

Source: - Ministry of Agriculture – and Land Reclamation, Economic Affairs Sector, Bulletin of Agricultural Economics, different issues
North Sinai Governorate – Directorate of Agriculture in North Sinai – localization – Crop Structure – different issues –

Moreover, table No (4) shows the evolution of olive's crop productivity, per feddan, in North Sinai Governorate during the period (2000-2013). The productivity has ranged from a minimum reached to about 1.24 tons in 2007, representing about 47.15% of the average of the period which reached to about 2.62 tons, and a maximum reached to about 3.88 tons, in (2008), representing about 147.5 % of the average of the period under study. The percentage of increase for both of the upper limits and the average of the period of productivity per

feddan has reached to about 138.5% and 93.2%, respectively, for the base year (2000) during the same period. Also, table No (5) shows the results of estimating the general trend equations of olive's productivity in North Sinai Governorate during study period that they have taken an decreasing general trend which is statistically significant. They have reached to about 0.067- tons that is equivalent to the percentage of about 0.07% of the average of olive's productivity, in North Sinai Governorate, which reached to about 93.3 tons.

Furthermore, table No (4) shows the evolution of olive's crop production, in North Sinai Governorate during the period (2000-2013). The production has ranged from a minimum reached to about 14.58 thousand tons in 2007, representing about 37.1% of the average of the period which reached to about 39.26 thousand tons, and a maximum reached to about 61.7 thousand tons, in (2013), representing about 157.31% of the average of the period under study. The percentage of increase for both of the upper limits and the average of the period of priod has reached to about 228.8% and 145.46%, respectively, for the base year (2000) during the same period. Also, table No (5) shows the results of estimating the general trend equations of olive's production in North Sinai governorate during study period that they have taken an increasing general trend which is statistically significant. They have reached to about 2.14 thousand tons that is equivalent to the percentage of about 5.44% of the average of Olive's production, in North Sinai governorate, which reached to about 39.26 thousand tons.

Table 5. The General Trend Equations of the Evolution of the Area, Productivity and Total Production of Olive Crop in North Sinai Governorate for the Period (2000/2013)

Statement	General Trend Equation	R^2	F	Average	Rate of Change %	Significance
Area (thousand feddans)	$\hat{Y}h = 9.107 - 1.218X1h$ (6.071)	0.754	**(36.85)	18.25	6.67	**
Productivity (tons)	$\hat{Y}h = 3.133 - 0.067X1h$ (-1.44)	0.146	**(2.062)	93.3	0.07	**
Production (tons)	$\hat{Y}h = 23.23X4h + 2.137 X2h$ (3.319)	0.478	**(11.019)	39.26	5.44	**

Source: - collected and calculated from Table (4).

Yh = the estimated value of the area in the year I. Xi = variable time, (I) 1, 2 .... 14. A , B = Indicates to reduce hard, and the regression coefficient of the equation, respectively.

(**) Indicates a significant regression model or when the level of significance (0.01). (*) Refers to the moral at the level of significance (0.05).

(- 2)

R = Average coefficient of determination . (F) = F value calculated

The relative importance of the area, productivity and production of olive in north Sinai governorate to the state: -

Table No (6) shows the evolution of the relative importance of the area, productivity and production of olive in North Sinai Governorate compared to the Republic during the period under study. It has been turned out that this relative importance area increased from about 11.17% in (2000) to about 13.72% in 2013, at an average reached to about 12.82%. While an insufficiency in the productivity per feddan is shown, during most of the years of study except for (2001, 2002, 2003, 2004, 2005, 2008, 2009,2010,2012), a relative superiority has been achieved for the productivity per feddan in North Sinai Governorate compared to the Republic. Also, the relative insufficiency of the productivity per feddan, for the average of the period (2000-2013), is shown at a rate reached to 69.36%. This insufficiency is due to the reliance of this Governorate on rains as a main source of irrigation, which affects the reduction of the productivity per feddan in this Governorate compared to the Republic that depends on more stable sources of irrigation for irrigating the crop. In addition, the fluctuation of the relative importance of olive crop production, in North Sinai Governorate, is shown for the Republic during study period, as this relative importance has been ranged from a minimum reached to 2.88% and 17.73% in 2006 and 2003 respectively. However, the relative importance of the average of the period has reached to about 10.58%.

The evolution of the cultivated areas of olive at the levels of centers in north Sinai governorate during study period (2007 – 2013): -

Table No (7) shows the evolution of the cultivated area of olive crop at the level of centers in North Sinai Governorate during study period (2007 – 2013). That area has ranged in Nakhl center from a minimum reached to about 0.405 thousand feddans in 2008, representing about 2.115 % of the total area of the centers during the same year, and a maximum reached to about 0.96 thousand feddans in 2013, representing about 2.5% of the total cultivated area of those centers for the same years. The area in Rafah center has ranged from a minimum reached to about 0.88 thousand feddans in 2008, representing about 5.5% of the total area of the centers during the same year, and a maximum reached to about 10.9 thousand feddans in 2013, representing

about 28.8% of the total cultivated area of those centers for the same year. Also, the cultivated areas in the centers of Al-Arish, Bear Al-Abd and Al-Sheikh Zuwyed has reached to about 7.7 thousand feddans and 5.6 thousand feddans respectively in 2013, representing about 20.4%, 16.1% and 14.9% of the total cultivated area in those centers in North Sinai Governorate for 2013. The results of measuring the general time trend in table No (8) refer to the evolution of the cultivated area of olive crop at the level of centers in North Sinai Governorate for the period (2007-2013). It has been turned out that it has taken an increasing general trend, which is statically significant, in Al-Arish center in North Sinai Governorate, as it reached to about 138.8 feddans which is equivalent to the percentage of about 1.94% of the average of olive's area in Rafah center that reached to about 7124 feddans. Moreover, it is shown that the area of Rafah center has taken an decreasing general trend, which is statically significant, in Al-Arish center in North Sinai Governorate, as it reached to about 1481.2 feddans which is equivalent to the percentage of about 45.2%% of the average of olive's area in Rafah center that reached to about 3270 feddans.

Table 6. The Evolution of the Relative Importance of the Area, productivity and production of olive crop in North Sinai Governorate compared to the Republic during the Period (2000/2013)

Statement	The Relative Importance of North Sinai Governorate Compared to the State		
	Area %	Productivity %	Production %
2000	11.17	73.18	9.58
2001	11.08	77.89	9.98
2002	11.0	73.99	17.36
2003	11.28	83.14	17.73
2004	11.85	78.66	10.54
2005	12.04	102.77	11.96
2006	11.65	68.39	7.32
2007	11.76	27.07	2.88
2008	18.83	88.79	9.69
2009	14.80	73.52	10.88
2010	14.92	46.87	9.84
2011	12.24	64.28	7.87
2012	13.19	58.46	11.66
2013	13.72	54.14	10.96
Average	12.82	69.36	10.58

Source: collected and calculated from Table (2.4).

Table 7. The Evolution of the Cultivated Area of Olive Crop at the Level of the Centers in North Sinai Governorate for the Period (2007-2013)

Area / feddan							
Year	Al-Arish	Rafah	Al-Sheikh Zuwyed	Bear Al-Abd	Rommanah	Al-Hasanah	Nakhl	Total
2007	6651	881	3585	712	2569	1090	470	15958
2008	7126	881	4002	2731	2498	1201	405	18844
2009	7760	1122	4622	3416	2659	1355	382	21316
2010	5623	1135	2142	3628	3136	1341	433	17438
2011	7304	1655	2928	3750	3094	1341	498	20570
2012	7670	6296	4930	5528	4290	1390	547	30651
2013	7736	10918	5637	6083	4978	1516	961	37829
Average	7124	3270	3978	3692.6	3317.7	1319	528	23229.4

Source: North Sinai Governorate – Directorate of Agriculture in North Sinai – localization – Crop Structure, unpublished data –

It is shown that the area of Al-Sheikh Zuwyed center in North Sinai Governorate has taken an increasing general trend, which is statically significant, as it has been reached to about 225.6 feddans which is equivalent to the percentage of about 5.6% of the average of olive's area in Al-Sheikh Zuwyed center that reached to about 3978 feddans. Also, it is turned out that the area of Bear Al-Abd in North Sinai Governorate has taken an increasing general trend, which is statically significant, as it has been reached to about 787.1 feddans which is equivalent to the percentage of about 21.31% of the average of olive's area in Bear Al-Abd center that reached to about 3692.6 feddans. It is shown that the area of Rommanah center in North Sinai Governorate has taken an increasing general trend, which is statically significant, as it has been reached to about 401.6 feddans which is equivalent to the percentage of about 12.1% of the average of olive's area in Rommanah center that reached to about 3317.7 feddans. It is shown that the area of Al-Hasanah center in North Sinai Governorate has taken an increasing general trend, which is statically significant, as it has been reached to about 58.64 feddans which is equivalent to the percentage of about 4.4% of the average of olive's area in Al-Hasanah center that reached to about 1319 feddans. In addition, it is turned out that the area of Nakhl center in North Sinai Governorate has taken an increasing general trend, which is statically significant, as it has been reached to about 66.8 feddans which is equivalent to the percentage of about 12.6% of the average of olive's area in Nakhl center that reached to about 528 feddans.

Table 8. The General Trend Equations of the Evolution of the Cultivated Area of Olive Crop at the Level of Centers in North Sinai Governorate for the Period (2007/2013)

Statement	General Trend Equation	R^2	F	Average	Rate of Change %	Significance
Al-Arish	$\hat{Y}h = 6569 + 138.827 X_1h$ (0.94)	0.151	**(0.885)	7124	1.94	**
Rafah	$\hat{Y}h = 2655.14\_1481.217 X_1h$ (3.231)	0.676	**(10.443)	3270	45.29	**
Al-Sheikh Zuwyed	$\hat{Y}h = 3075.4 + 225.64 X_1h$ (0.989)	0.163	*(0.979)	3978	5.67	*
Bear Al-Abd	$\hat{Y}h = 543.85 + 787.17 X_1h$ (7.306)	0.914	**(53.381)	3692.6	21.31	**
Rommanah	$\hat{Y}h = 1711.14 + 401.647 X_1h$ (4.9161)	0.828	**(24.167)	3315.7	12.11	**
Al-Hasanah	$\hat{Y}h = 1084.5 + 58.647 X_1h$ (5.453)	0.856	**(29.74)	1319	4.44	**
Nakhl	$\hat{Y}h = 260.46 + 66.89 X_1h$ (2.361)	0.527	**(5.578)	528	12.66	**
Total	$\hat{Y}h = 10589.2 + 3160.036 X_1h$ (3.648)	0.852	**(13.31)	23229.4	13.60	**

Source: - collected and calculated from Table (7).
Yh = the estimated value of the area in the year I. Xi = variable time, (I) 1, 2 .... 14. A , B = Indicates to reduce hard, and the regression coefficient of the equation, respectively.
(**) Indicates a significant regression model or when the level of significance (0.01). (*) Refers to the moral at the level of significance (0.05).
(- 2) : R = average coefficient of determination . (F) = F value calculated

The evolution of olive's production at the level of centers in north Sinai governorate during study period (2007 - 2013): -

Table No (9) shows the evolution of olive crop's production at the level of the centers in North Sinai governorate during study period (2007 – 2013). The production has ranged in Nakhl center from a minimum reached to about 0.6 thousand tons in 2007, representing about 2.9% of the total production of the centers during the same year, and a maximum reached to about 2.4 thousand tons in 2013, representing about 2.5% of the total production of those centers for the same years. The production in Rafah center has ranged from a minimum reached to about 1.1 thousand tons in 2007, representing about 5.5% of the total production of the centers during the same year, and a maximum reached to about 27.2 thousand tons in 2013, representing about 28.8% of the total production of those centers for the same year. Also, the production in the centers of Al-Arish, Bear Al-Abd and Al-Sheikh Zuwyed has reached about (19.3, 15.7, 14.1) thousand tons respectively in 2013, representing about 20.4%, 16.1% and 14.9% of the total cultivated area in those centers in North Sinai Governorate for 2013.

Table 9. The development of olive crop's agricultural production at the level of centers in North Sinai governorate for the Period (2007-2013)

Production / ton							
Year	Al-Arish	Rafah	Al-Sheikh Zuwyed	Bear Al-Abd	Rommanah	Al-Hasanah	Nakhl	Total
2007	8646	1145	4660	925	3339	1417	611	20745
2008	27791	3425	15607	10650	9742	4683	1579	73491
2009	19400	2805	11555	8540	6647	3387	955	53290
2010	12370	2497	4712.4	7981	6899	2950	952	38363
2011	16434	3723	6588	8437	6961	30172	1120	46282
2012	17641	14480	11339	12714	9867	3197	1258	60497
2013	19340	27295	14092	15207	12445	3790	2402	94572
Average	17375	6910	9793.3	9207.7	7985.7	7085.1	1268	55320

Source: North Sinai Governorate – Directorate of Agriculture in North Sinai – localization – Crop Structure, unpublished data –

Table No (10) shows the results of measuring the general trend of the evolution of olive crop's agricultural production at the level of centers in North Sinai Governorate for the period (2007 – 2013). The production of all the centers in North Sinai governorate has taken an increasing trend, which is statically significant, as the total production in the centers has reached to about 6731.6 tons, which is equivalent to the percentage of about 12.2 % of the average of olive's production of the total centers that reached to about 55320 tons.

Table 10. The general trend equations of the evolution of olive crop's production at the level of centers in North Sinai Governorate for the Period (2007- 2013)

Statement	General Trend Equation	R^2	F	Average	Rate of Change %	Significance
Al-Arish	$\hat{Y}h$ = 16115.14 + 314.85X1h (0.253)	0.0126	*(0.064)	17375	1.81	*
Rafah	$\hat{Y}h$ = 6586_ 3624.21X1h (3.111)	0.659	**(9.681)	7910	45.81	**
Al-Sheikh Zuwyed	$\hat{Y}h$ = 7680.1+ 52832X1h (0.589)	0.0651	*(0.347)	9793.3	5.39	*
Bear Al-Abd	$\hat{Y}h$ = 2511.85 + 1673.96X1h (3.0186)	0.645	**(9.112)	9207.7	18.18	**
Rommanah	$\hat{Y}h$ = 4002.57 + 995.7X1h (2.387)	0.532	**(5.698)	7985.7	12.46	**
Al-Hasanah	$\hat{Y}h$ = 2666.285 + 1104.77X1h (0.536)	0.0544	*(0.287)	7085.1	15.59	*
Nakhl	$\hat{Y}h$ = 568.71+ 174.857X1h (1.906)	0.421	**(3.633)	1268	13.78	**
Total	$\hat{Y}h$ = 28393.57 + 6731.60X1h (1.699)	0.366	**(2.88)	55320	12.16	**

Source: - collected and calculated from Table (9).
Yh = the estimated value of the production in the year I. Xi = variable time, (I) 1, 2 .... 7. A , B = Indicates to reduce hard, and the regression coefficient of the equation, respectively.
(**) Indicates a significant regression model or when the level of significance (0.01). (*) Refers to the moral at the level of significance (0.05).
(- 2): R = average coefficient of determination. F = F value calculated

Recommendation:-
1- Giving an attention to the agricultural operations, serving Olive trees and providing farmers with fertilizers, micro elements and the required chemicals through the country's support for them.
2- Increasing the guiding role and providing guiding programs in the field of producing and marketing of Olive crop in North Sinai governorate.
3- There is a necessity to establish associations for the producers and exporters of Olive crop and make a database for them.
4- Providing the necessary funding for Olive producers through Agricultural Credit Bank and Agricultural Development Fund in order to finance the farmers in the stage of production and marketing.
5- Expanding in planting the crops loaded on Olive trees, especially in the new lands, in order to improve the agricultural soil and provide it with the important nutrients.

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