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The role of quantification to present the components of the economic importance of some fiber and oil crops in Egypt

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Abstract: This research aims to measure the impact of the components of monetary economic importance for cast cotton and linen straw as fiber crops, and for flaxseed, soybeans and sesame as oil crops, as well as to measure the impact of the relationship between those elements and each other on changing this importance , to change the extent of the contribution of the crops studied in the total monetary value of national agricultural income in the Arab Republic of Egypt during the period (2000-2020), in an attempt to determine the responsibility of each element of the Arab Republic of Egypt during the period (2000-2020), in an effort to determine the responsibility of each element of the elements associated with the changes in this importance on the one hand, and to obtain some digital indicators that appoint planning men and makers of productive and price policies in efficiently guiding resources and achieving the objectives of the agricultural economic policy related to increasing production and agricultural income on the other. The research method relied on the use of records as a statistical analytical tool that enables to isolate the effect of each of these elements by dividing the general record into partial records by the number of elements, with the methods of studying the separate change of the element away from the influence of other elements, and the successive change of the element with its relationship with the other elements in analysis and measurement. The results of the research indicate that a range of elements have influenced the increase in the monetary economic importance of the crops in question, while another group has reduced them. Changes have arisen by increasing the monetary economic importance as a result of the increase in prices, in addition to the increase or decrease caused by the increase or decrease in the area under cultivation and/or the average production of acres in varying proportions. It is clear from the research that the price element is the active factor in increasing the monetary economic importance of the crops studied, as well as it is clear that the amount of monetary increase can be influenced by increasing farm prices, especially since their increase may be an incentive for farmers to continue if not expand the cultivation of those crops, while reducing the decrease in the area cultivated and working to increase the productivity of the field.

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Introduction:

Fiber crops and oil crops are strategic crops that have a relative place in Egypt's national agricultural economic structure, and oil crops are among the most important agricultural food groups, as well as other secondary uses.

The types of these crops have been selected from the fiber crop group for this study cast cotton and linen straw, and were selected from the group of oil crops with flax seed, soybeans and sesame beans with their seeds and grains are the main source of the provision of vegetable oils. Some studies [(6)] showed that Egypt imports about 5.7 million tons per year of oils and oilseeds, including 2 million tons of oil and about 3.7 million tons of oil seeds that are squeezed in Egypt at a cost of more than 25 billion pounds annually.

Achieving self-sufficiency in these crops is a national goal, as the expansion of their cultivation achieves a degree of self-sufficiency, thereby

reducing dependence on imports from abroad, leading to the provision of foreign currencies and their orientation to capital investments.

Study problem:

Despite the economic importance of fiber crops and oil crops under study, namely cast cotton, linen straw, flaxseed, soybeans and sesame beans, the length of their stay in the ground with low sophora profitability compared to vegetable crops with high and rapid cash yields has affected the production of these crops and the local supply of them as a result of their impact on the cultivated area and the fruit productivity observed in the last period fluctuating each of these crops, as the quantities produced depend on them. Also on the price of the mezze which in most cases is determined by the conditions of demand and supply. Although Egypt's average per capita oil is about 20 kg/year lower than the average global per capita oil, at about 32 kg/year, Egypt imports about 98% of food oil consumption to fill the deficit between production and consumption [(5)] .

The goal of the study:

The study aims to analyze the elements - components - of economic importance estimated in monetary value of each crop, and to isolate the impact of each of those elements, while measuring the impact of the relationship between these elements in order to determine the responsibility of each element in increasing or decreasing this importance. This is to draw some conclusions that help decision makers achieve the optimal use of the productive resources used in the production of those crops and the extent to which they are productively efficient and thus achieve economic efficiency.

Research method:

The study relied on the use of Index Numbers as an analytical instrument in quantifying components of economic importance, as well as in quantifying the relationship between these components. It should be noted that records [(1)] are usually used traditionally as a tool to measure the rate of development or change in economic phenomena or to make comparisons between them at different time periods or geographical areas. However, in this research, records are used as a means of measuring the quantitative relationship between variables, i.e. measuring the effect of one or more of the components of the phenomenon on the size of the phenomenon, or in other words measuring the extent to which the effects and association of the changes of the components of one phenomenon change from one time to another. The importance of using records in this area is due to the fact that it measures this quantitative relationship in the case of movement [(2)] unlike other statistical measures or instruments - such as correlation - which measures that relationship in the case of stillness, and even because it gives the amount of change in the phenomenon as a result of changing its components in specific quantities and values contrary to the link, for example, which measures the extent of the relationship between variables . the extent of the variables. The strength or weakness of the relationship between variables as indicated by the value of the correlation factor. We are also interested in pointing out here that the use of indices as a means of measuring the impact of the elements or factors that make up a phenomenon on the change of phenomenon itself is linked to the availability of two main conditions: first, that all the elements or factors in question can be expressed quantitatively, and secondly that the values of expressing the components of the phenomenon should have a striking model relationship, meaning that the value of the phenomenon is equal to the product of multiplying the component elements. The use of indices to measure the extent to which specific factors affect a phenomenon is mainly summarized in the evaluation of the general index of the phenomenon to partial records, the evaluation of the general index to its partial components, following the methods of studying change or the separate effect . the independent effect of the elements, and the study of change or related effect . the sequence of elements on the economic phenomenon. The second method is characterized by the fact that the partial index value calculated for each individual element is not only related to the degree of change of the element under study and research, but also to the change of the other elements In other words, calculating partial records in this way takes into account the impact of all factors together, as opposed to when calculating partial records in the initial method of each item in a separate way or independent of the effect of other factors or elements. This does not mean that there is a contradiction between the first method and the second method, on the contrary, the second method is complementary to the first method, where it divides the total effect on the phenomenon into parts according to the elements that make up it on the one hand and the balance of the overlapping effect between the elements with each other on the other.

The division of the general index into its partial components is actually aimed at dividing the overall effect on the phenomenon to its parts according to its components and thus the possibility of isolating and measuring the amount of effect of each component of the phenomenon on the value of the phenomenon in the comparison period relative to the base period in one of the two methods of analysis as follows:

Assuming that the economic importance measured in the monetary value of the crops in question is symbolized by the R0 code in the base period, R1 in the comparison period and

R0 = (A0) * (M0) * (P0) , R1= (A1) * (M1) * (P1)

Where:

(A0), (A1) = symbolizes the area cultivated by the crop in the acre in the base period and the comparison period.

(M0), (M1) = symbolizes the average production of acres of the crop in the base period and the comparison period.

(P0), (P1) = symbolizes the mezze price per unit of output in the base period and the comparison period.

It was possible to determine the amount of separate, i.e. independent, effect of each of these components of the phenomenon on the amount of change in the size of the phenomenon in the comparison period relative to the base period using the following relationships[3]

- Partial record of the effect of element (A) on phenomenon (R):

$I_A = ((A_1 * M_0 * P_0) - (A_0 * M_0 * P_0)) * 100$

- Partial record of the effect of the element (M) on the phenomenon (R) :

$I_M = ((A_0 * M_1 * P_0) - (A_0 * M_0 * P_0)) * 100$

- Partial record of the effect of element (P) on phenomenon (R) :

$I_P = ((A_0 * M_0 * P_1) - (A_0 * M_0 * P_0)) * 100$

- The general record for the change of phenomenon (R):

$I_R = (R_1 - R_0) = ((A_1 * M_1 * P_1) - (A_0 * M_0 * P_0)) = I_A + I_M + I_P$

$= (((A_1 * M_0 * P_0) - (A_0 * M_0 * P_0)) + ((A_0 * M_1 * P_0) - (A_0 * M_0 * P_0)) + ((A_0 * M_0 * P_1) - (A_0 * M_0 * P_0))) * 100$

As a result of the absolute forced total partial effect of the components of the phenomenon separate from each other, the amount of absolute actual change in the size of the phenomenon during the base and comparison periods is not equal to the amount of actual change in the magnitude of the phenomenon during the base and comparison periods as illustrated by the following relationship:

$(R_1 - R_0) \neq (A_1 M_0 P_0 - A_0 M_0 P_0) + (A_0 M_1 P_0 - A_0 M_0 P_0) + (A_0 M_0 P_1 - A_0 M_0 P_0)$

In other words :

$A_1 M_1 P_1 - A_0 M_0 P_0 \neq (A_1 M_0 P_0 + A_0 M_1 P_0 + A_0 M_0 P_1) - 3 (A_0 M_0 P_0)$

Where there's a difference between them. This difference is what is called the non-distributed value which is or expresses the result of the overlapping effect of elements or factors together on the phenomenon, which is not taken into account when calculating the partial records of each element in a separate way, shows the importance of taking into account the impact of all elements and factors together on the phenomenon in question and thus shows the importance of using the second method of analysis, which is the method of successive or related change of elements. Therefore, it was possible to determine the amount of successive and related effect of each component of the phenomenon on the amount of change in the size of the phenomenon in the comparison period relative to the base period by the use of the following relationships[4] :

- Partial record of the effect of element (A) on phenomenon (R):

$I_A = ((A_1 * M_1 * P_1) - (A_0 * M_1 * P_1)) * 100$

- Partial record of the effect of the element (M) on the phenomenon (R) :

$I_M = ((A_0 * M_1 * P_1) - (A_0 * M_0 * P_1)) * 100$

- Partial record of the effect of the element (P) on the phenomenon (R) :

$I_P = ((A_0 * M_0 * P_1) - (A_0 * M_0 * P_0)) * 100$

- The general record for the change of phenomenon (R) :

$I_R = (R_1 - R_0) = ((A_1 * M_1 * P_1) - (A_0 * M_0 * P_0)) * 100 = I_A + I_M + I_P$

$= (((A_1 * M_1 * P_1) - (A_0 * M_1 * P_1)) + ((A_0 * M_1 * P_1) - (A_0 * M_0 * P_1)) + ((A_0 * M_0 * P_1) - (A_0 * M_0 * P_0))) * 100$

Here, it is noted that the absolute forced total of the partial effect of the components of the phenomenon, taking into account the effect of changing other factors, is equal to the actual change in the size of the phenomenon.

In order to identify the overlapping effect between the components of the phenomenon on the size of the phenomenon in question, it is possible to isolate and measure the impact of the relationship between the elements as follows:

1- To isolate the common effect of element (A) with element (M) from the amount of total change in the size of the phenomenon as a result of the effect of element (A) with all other elements, the following relationship was used:

$(A_1 M_1 P_1 - A_0 M_1 P_1) - (A_1 M_0 P_1 - A_0 M_0 P_1)$

2- To isolate the common effect of element (A) with element (P) from the amount of total change in the size of the phenomenon as a result of the effect of all elements while neglecting the effect of element (M), the following relationship was used :

$(A_1 M_0 P_1 - A_0 M_0 P_1) - (A_1 M_0 P_0 - A_0 M_0 P_0)$

3- With the same idea, it was possible to measure the impact of the relationship between (M) and (P), the following relationship was used :

$(A_0 M_1 P_1 - A_0 M_0 P_1) - (A_0 M_1 P_0 - A_0 M_0 P_0)$

To determine the rate of change in the phenomenon in question as a result of the change in each of its components. In other words, to determine

the amount of qualitative weight of the change of each component of the phenomenon to change in the same phenomenon in the comparison period for the base period, the following relationships were used:

- The qualitative weight of element change (A) on the change in phenomenon (R):

$A_W = \{((A_1 M_1 P_1) - (A_0 M_1 P_1)) / (R_1 – R_0)\} * 100$

- The qualitative weight of element change (M) on the change in phenomenon (R):

$M_W = \{((A_0 M_1 P_1) - (A_0 M_0 P_1)) / (R_1 – R_0)\} * 100$

- The qualitative weight of element change (P) on the change in phenomenon (R):

$P_W = \{((A_0 M_0 P_1) - (A_0 M_0 P_0)) / (R_1 – R_0)\} * 100$

It is clear from the previous analysis of the use of records that it generally helps to study the economic phenomenon and its components, i.e. affecting it, by dividing the change in the phenomenon into partial records of the components of the phenomenon in addition to studying the impact of the relationship between these variables or elements and determining the amount of qualitative weight to change each element on the change in the phenomenon.

Data sources:

The statistical data needed for this study on acre-grown area, acre productivity and the mezzanine price per unit from the period (2000-2020) for the crops in question were collected: cast cotton, linen straw, fiber crops, flaxseed, soybeans and sesame beans as oil crops from the records and bulletins of the Ministry of Agriculture and Land Reclamation, economic affairs sector. The study also used many Arab and foreign references in the theoretical and analytical framework.

Results

First: Analysis of the economic importance of fiber crops:

1 Cast cotton:

The economic importance of cotton crop as a fibre crop is limited to the monetary value of the output of cast cotton, and the increase in economic importance may be due either to the increase in the area cultivated despite the decline in the productivity or stability of the field, or the decrease in the price of the plant or its relative stability, as well as the lack of monetary economic importance may be due to the lack of cultivated area despite the high productivity of the field or the price of agriculture or stability, so it is necessary to measure the changes () Relative developments in each element of the economic components.

By reading table 1, the monetary economic importance of the cast cotton crop as a fiber crop in the Arab Republic of Egypt increased during the period (2000-2020), the absolute monetary value of the crop increased from about 340.503 million pounds in the base period (2000- 2010) to about 799.155 million pounds in the comparison period (2011-2020), which increased by about 458.652 million pounds, or about 134.7% higher than in the base period. By studying the developments i.e. the changes that have taken place the components of the monetary economic importance of the crop between the base and comparison periods, it is noted that the partial records of the cultivated area, the average production of acres and the price of the unit of output amounted to about 53.7%, 128.2%, 340.7%, respectively. This is considered to be that the area under cultivation decreased in the period (2011-2020) by 46.3% from the base period, while both the average production of acres and the agricultural price per unit of output increased by 28.2%, 240.7% in the same order.

Table 1: Relative changes in the elements of monetary economic importance of the cast cotton crop in the Arab Republic of Egypt during the period (2000-2020).

Elements of economic importance of the crop		Average (2000-2010) R0 (base period)	Average (2011-2020) R1 (comparison period)	Index (%)
Area (1,000 acres)	A	598.091	321.400	53.738
Average acre production (quintar)	M	0.933	1.196	128.189
The price (pounds/quintar)	P	610.200	2079.000	340.708
Production value (thousand pounds)	R	340503.135	799155.958	234.699

Source: Collected and calculated from table (1) data in the annex.

To measure the impact of change in each of these components of the monetary economic importance of the crop to change in the period (2011-2020) for the period (2000-2010), as well as to measure the impact of the relationship between these The elements on the value of that importance during the same period, using the records in the analysis, could isolate this effect in two separate ways, i.e.

independent and sequential change, i.e. related to the elements, and obtain the results recorded in table 2, and by extrapolating those results, it is noted that when examining the effect Separate from the decrease in the area cultivated from the crop on the total monetary value away from the influence of other elements this led to a decrease in the monetary value by 157.524 million pounds, while when measuring the impact of this element with its relationship with other elements helped to decrease the monetary value by 687.987 million pounds. This increase is due to the decrease in the monetary value of the crop by 530.462 million pounds when measuring the effect of decreasing the element of cultivated area with its relationship with other elements on the monetary value of the crop to its causes, The analysis found that about 151.288 million pounds of it is due to the overlapping effect of the two elements of the cultivated area and the average production of acres together on the monetary value, and that the rest of which is about 379.174 million pounds due to the common effect between the two elements of the cultivated area and the mezze price per unit of output, as well as the extrapolation of the results notes that when examining the separate effect of increasing the average production of acres of crop in quintar on the total monetary value of the crop away from the influence of other elements This led to an increase in the monetary value by 95.983 million pounds due to the impact of the relationship between the two elements of average acre production in quintar and the mezzanization price of the pound of output, where the analysis found that it is estimated at 231.039 million pounds. Finally, the results indicate that the impact of the increase in the price of the pound of the crop on the total monetary value - by imposing the stability of the two elements of the cultivated area and the average production of acres - amounted to about 819.618 million pounds.

Table 2 : Results of the analysis of the total change in the components of the economic importance of the cast cotton crop in the Arab Republic of Egypt during the period (2000-2020) .

Elements of monetary economic importance	The absolute impact of changing elements on economic importance (in thousand pounds)				Weight Qualitative (%)
	Separate measurement method	Common effect between elements		Sequential measurement method	
		M	P		
A	157524.780 -	151288.275 -	379174.689 -	687987.744 -	150.002 -
M	9593.198	--	231039.205	327022.403	71.301
P	819618.164	--	--	819618.164	178.701
R	758076.582	151288.275 -	148135.484 -	458652.823	100.000

Source: Collected and calculated from table 1 data.

To determine the rate of change in the monetary economic importance of the crop as a result of the change of each component of it, to determine the amount of qualitative weight of the change of each component of the monetary economic importance of the crop to change the value of this importance by about 458.652 million pounds in the comparison period (2011) - 2020) from the base period (2000-2010), it was found that the qualitative weight of the increase in average acre production by 28.2% on the change in any increase in the monetary economic importance of the crop amounted to about 71.3% of That increase. The increase in the price of the unit of output by 240.7% contributed 178.7% of the value of the change, the increase in the monetary economic importance of the crop, while on the contrary the decrease in the area planted from the crop level in the base period by 46.3% was responsible for the decrease in the value of change, the increase in the monetary economic importance of the crop by 150%. It is clear from this that the element of the price of agriculture plays the main role in increasing the monetary economic importance of the crop, especially since increasing it would stimulate farmers to reduce the decrease in the area under cultivation, and thus reduce the negative impact of this element on the change in the monetary economic importance of the crop.

2 Linen straw:

The economic importance of the linen crop as a fiber crop is limited to the monetary value of the product of linen straw, which is given to extract its fibers, and since the size of the economic importance of a crop depends - as mentioned above - on a number of elements, the most important of which is the area cultivated with it, the productivity of the feddan and the agricultural price of the unit of output. It was therefore important to study the evolution of each of these elements.

By reading table 3, the monetary economic importance of the linen crop (straw) as a fiber crop in the Arab Republic of Egypt decreased during the period (2000-2020), the total monetary value of the crop increased from about 31.596 million pounds in the base period (2000-2020). to about 66.504 million pounds in the comparison period (2011-2020), which increased by about 34.908 million pounds or about 110.482% from the base period.

Table 3 : Relative changes in the elements of monetary economic importance of the linen crop (straw) in the Arab Republic of Egypt during the period (2000-2020).

Elements of economic importance of the crop		Average (2000-2010) R0 (base period)	Average (2011-2020) R1 (comparison period)	Index (%)
Area (1,000 acres)	A	19.074	12.482	65.439
Average acre production (quintar)	M	3.997	4.447	111.261
The price (pounds/quintar)	P	427.091	1046.600	245.053
Production value (thousand pounds)	R	31596.306	66504.627	210.482

Source: Collected and calculated from table (2) data in the annex .

Table 4 : Results of the analysis of the total change in the components of the economic importance of the linen crop (straw) in the Arab Republic of Egypt during the period (2000-2020) .

Elements of monetary economic importance	The absolute impact of changing elements on economic importance (in thousand pounds)				Weight Qualitative (%)
	Separate measurement method	Common effect between elements		Sequential measurement method	
		M	P		
A	- 11253658	- 3105497.2	- 16323793	- 30682948	- 120.158
M	3666847.3	--	5318879.8	8985727.1	35.189
P	47232741	--	--	47232741	184.969
R	39645930.3	- 3105497.2	- 11004913.2	25535520.1	100.000

Source: Collected and calculated from table 3 data.

It is also noted from the table data that the records of changes developments that have been the components of the monetary economic importance of the crop between the two periods amounted to about 65.439%, 111.261%, and 245.053%, respectively. This is considered to be that the area under cultivation of the crop decreased in the comparison period (2011-2020) by 34.561% from the base period, while the average production of acres and the agricultural price per unit of crop output increased In the comparison period (2011-2020) by 11.261%, 145,053% compared to the base period (2000-2010) in the same order. To measure the impact of change in each of these components of the monetary economic importance of the crop to change it, as well as to measure the impact of the relationship between these elements on the value of this importance during the period (2011-2020) for the period (2000-2010), records in the analysis can isolate this effect in two separate ways of change. independent and sequential change i.e. related to elements, and obtain the results recorded in table No. (4), According to these results, it is noted that when examining the separate impact of the lack of cultivated area of the crop on the total monetary value away from the influence of other elements, this led to a decrease in the monetary value by 11.253 million pounds, while when examining the successive impact of this element with its relationship with other elements helped to decrease the monetary value by 30.682 million pounds. The analysis showed that the impact of the relationship between the element in question, namely the cultivated area and the average production of acres on the total monetary value of the crop, amounted to about 3.105 million pounds, and the impact of the relationship between the same element, namely the cultivated area and the planted price of the unit of output of the crop on the change in the total monetary value also amounted to about 16.323 million pounds. Similarly, when examining the separate effect of increasing the average production of acres of crop per ton on the total monetary value of the crop away from the influence of other elements, this led to an increase in the monetary value by 3.666 million pounds. While measuring the impact of this element with its relationship with other elements helped to increase

the monetary value by 8.985 million pounds, I calculated the impact of the relationship between the two elements studied, namely, the average production of acres per ton and the price of a ton of output by about 5.318 million pounds. Finally, it should be noted that the impact of the increase in the price of a ton of crop on the total monetary value of the crop - by imposing the stability of the two elements of the cultivated area and the average production of acres as they were in the base period - amounted to about 47.232 million pounds.

Second : Analysis of the economic importance of oil crops

(1) Flax seed:

The economic importance of the linen crop (seed) is estimated as an oil crop, if measured on the basis of the monetary value it contributes to the national agricultural monetary income by multiplying the data of the area cultivated in it in the field productivity of the field in the agricultural price of the unit of its output .

By reading table 5 data, this monetary economic importance of the linen crop in the Arab Republic of Egypt developed during the period (2000-2020), the total cash value of the crop in Jordan increased from about EGP 26.426 million in the base period (2000). - 2010) to about 70.937 million pounds in the comparison period (2011-2020), i.e. it increased by about 44.511 million pounds or about 168.436% from the base period .

The components of this monetary economic importance of the crop also evolved during the same period, with the average figures for these elements in the comparison period for the base period about 65.44%, 93.139%, and 324,728%, respectively. This indicates that the area under cultivation of the crop decreased by 34.56% from the base period, as well as the average component of the production of acres in the crop decreased by 6.861% from the base period, while the price per unit of crop output in the comparison period (2011-2020) increased by 224.728% from the base period (2000-2010).

Using the records in analyzing the overall changes in the monetary economic importance of the crop to its basic elements, returning it to its causes to measure the impact of change in each of these components, as well as to measure the impact of the relationship between these elements on their change during the period (2011- 2020) For the period (2000-2010), these effects can be isolated in two separate ways, independent and sequential change, the related elements, the results recorded in table 6, and by settling those results It should be noted that when examining the separate impact of the lack of cultivated area of the crop on the total monetary value away from the influence of other elements, this led to a decrease in the monetary value by 10.2 million pounds, while when measuring the impact of this element with its relationship with other elements helped to decrease the monetary value by 30.851 million pounds. Returning this increase in the decrease in the monetary value of the crop by about 20.651 million pounds when measuring the effect of decreasing the element of cultivated area with its relationship with other elements on the monetary value of the crop to its causes, the analysis showed that about 2.272 million pounds of it is due to the combined effect of the two elements of cultivated area and the average production of acres together on the monetary value, and that the rest of which is about 22.923 million pounds is due to the combined effect between the elements of the cultivated area and the average production of acres together on the monetary value, the rest is about 22.923 million pounds due to the combined effect between the elements of the cultivated area and the estimated price of the unit produced.

Table 5: Relative changes in the elements of monetary economic importance of the linen crop (seed) in the Arab Republic of Egypt during the period (2000-2020).

Elements of economic importance of the crop		Average (2000-2010) R0 (base period)	Average (2011-2020) R1 (comparison period)	Index (%)
Area (1,000 acres)	A	19.074	12.482	65.440
Average acre production (quintar)	M	5.456	5.082	93.139
The price (pounds/quintar)	P	283.591	920.900	324.728
Production value (thousand pounds)	R	26426.454	70937.335	268.433

Source: Collected and calculated from table (2) data in the annex .

Table 6 : Results of the analysis of the total change in the components of the economic importance of the linen crop (seed) in the Arab Republic of Egypt during the period (2000-2020).

Elements of monetary economic importance	The absolute impact of changing elements on economic importance (in thousand pounds)				Weight Qualitative (%)
	Separate measurement method	Common effect between elements		Sequential measurement method	
		M	P		
A	- 10200.550	2272.658	- 22923.524	- 30851.417	- 106.746
M	- 2025.051	--	- 4550.863	- 6575.915	- 22.753
P	66329.004	--	--	66329.004	229.499
R	54103.402	2272.658	- 27474.388	28901.672	100.000

Source: Collected and calculated from table 5 data.

It is also noted from extrapolating the results, that when examining the separate effect of increasing the average production of acres of crop per ton on the total monetary value of the crop away from the influence of other elements, this led to a decrease in the monetary value by 2.025 million pounds, but when measuring the impact of this element with its relationship with other elements helped to decrease the monetary value by 6.575 million pounds as a result of the impact of the relationship between the two elements of average pert production per ton and the price of the ton of output as shown by The analysis is estimated at 4.55 million pounds. Finally, the results indicate that the impact of the increase in the price of a ton of crop on the total monetary value of the crop - by imposing the stability of the two elements of the cultivated area and the average production of acres as they were in the base period - amounted to about 66.329 million pounds.

In order to determine the rate of change in the monetary economic importance of the crop as a result of the change of each component of it, to determine the amount of qualitative weight of the change of each component of the monetary economic importance of the crop to change any decrease in the monetary economic importance of the crop amounted to about 22,753% of that increase. The increase in the price of a unit of output by 224,728% contributed 229,499% of the value of the change, the increase in the monetary economic importance of the crop, while on the contrary the decrease in the area cultivated from the crop level in the base period by 34.56% was responsible for the decrease in the value of change, the increase in the monetary economic importance of the crop by 106.746%. It is clear from this that the element of the price of agriculture plays the main role in increasing the monetary economic importance of the crop, especially since increasing it would stimulate farmers to reduce the decrease in the area under cultivation, and thus reduce the negative impact of this element on the change in the monetary economic importance of the crop.

2**Soybeans**:

The economic importance of the soybean crop is estimated at the monetary economic value of the crop, which contributes to national agricultural monetary income. By settling table 7 data, this monetary economic importance of the soybean crop in the Arab Republic of Egypt developed during the period (2000-2020), the total monetary value of the crop increased from about EGP 44.706 million in the base period (2000- 2010) to about 76.077 million pounds in the comparison period (2011-2020), it increased by about 131.371 million pounds, or about 293,854% over the base period. The development of the components of any elements of this monetary economic importance of the crop is also observed during the same period, as the records of the averages of these elements in the comparison period for the base period were about 123.257%, 112,352%, 284,408%, respectively. This means that changes in average crop area, average acre production and per unit price of crop output in the comparison period (2011-2020) were estimated at 23,257%, 12.352%, 184.408% from the base period (2000-2010) and in the same order.

Using the records in the analysis of the total changes in the monetary economic importance of the crop to its basic elements, returning it to its causes to measure the impact of change in each of these components, as well as to measure the impact of the relationship between these elements on their change during the period (2011- 2020) for the period (2000-2010), these effects can be isolated in two separate ways, independent and sequential change, related to elements, and thus obtain the results recorded in Table 7, these results indicate Until the change of the element of the cultivated area by 23,257% was responsible for the percentage of 25.290% erased the total change in the monetary economic importance of

the crop of approximately 131.371 million pounds, where the separate effect of this element on the total The monetary value of the crop away from the influence of other elements is about 10.397 million pounds, and its combined effect with the average production of acres was about 3.652 million pounds, and its combined effect with the agricultural price per unit of output was about 19.173 million pound.

Its successive impact with its relationship with other elements amounted to about 33.223 million pounds. The change in the element of average acre production by 12.352% contributed 11.955% of the value of the change in the monetary economic importance of the crop, where its separate effect was about 5.522 million pounds, and its combined effect with the price of the crop was about 10.183 million pounds, and its successive effect with its relationship with other elements amounted to about 15.705 million pounds. Finally, the results indicate that 62.755% of the value of the change, the increase in the monetary economic importance of the crop, which is equivalent to 82.442 million pounds due to the change. the increase in the element of the crop's mezze price by 184.408% from its level in the base period, and it is clear that the price of the crop plays a key role in increasing the monetary economic importance of the crop.

Table 7: Relative changes in the elements of monetary economic importance of soybean crops in the Arab Republic of Egypt during the period (2000-2020).

Elements of economic importance of the crop		Average (2000-2010) R0 (base period)	Average (2011-2020) R1 (comparison period)	Index (%)
Area (1,000 acres)	A	20.364	25.100	123.257
Average acre production (quintar)	M	1.271	1.428	112.352
The price (pounds/quintar)	P	1727.273	4912.500	284.408
Production value (thousand pounds)	R	44706.392	176077.755	393.854

Source: Collected and calculated from table (3) data in the annex .

Table 8 : Results of the analysis of the overall change in the components of the economic importance of the soybean crop in the Arab Republic of Egypt during the period (2000-2020).

Elements of monetary economic importance	The absolute impact of changing elements on economic importance (in thousand pounds)				Weight Qualitative (%)
	Separate measurement method	Common effect between elements		Sequential measurement method	
		M	P		
A	10397.244	3652.7	19173.333	33223.277	25.290
M	5522.348	--	10183.641	15705.989	11.955
P	82442.097	--	--	82442.097	62.755
R	98361.689	3652.7	29356.974	131371.363	100.000

Source: Collected and calculated from table 7 data.

3 Sesame

The economic importance of sesame crops as an oil crop in the Arab Republic of Egypt, like other crops or other plant crops, is affected by both the area under cultivation, the average feddan production and the agricultural price of the unit of output as essential elements in the formation of the monetary value of the crop, which contributes to the national monetary agricultural income. Referring to table 9 data, this monetary economic importance of sesame crop in the Arab Republic of Egypt has evolved during the period (2000-2020), the total cash value of the crop has increased from about EGP 21.313 million in the base period (2000). - 2010) to about 66.652 million pounds in the comparison period (2011-2020), it increased by about 45.338 million pounds, or about 212,721% from the base period. The development of the components of any elements of this monetary economic importance of the crop is also observed during the same period, as the records of the averages of these elements in the comparison period for the base period were about 104.895%, 101.515%, and 293.679%, respectively. This means that changes in the average area under cultivation of the crop, the average production of acres and the agricultural price per unit of crop output in the comparison period (2011-2020) were estimated at 4.895%, 1.515%, 193,679% from the base period (2000-2010) and in the same order.

Using the records in the analysis of the total changes in the monetary economic importance of the crop to its basic elements, returning it to its causes to

measure the impact of change in each of these components, as well as to measure the impact of the relationship between these elements on their change during the period (2011- 2020) For the period (2000-2010), these effects can be isolated in two separate ways, independent and sequential change, related to elements, and thus obtain the results recorded in table 10, these results indicate Until the change of the element of the cultivated area by 4.895% was responsible for 6.860% of the total change in the monetary economic importance of the crop of approximately 45.338 million pounds, where the separate effect of this element on the total value Cash for the crop away from the influence of other elements about 1.043 million pounds, and its combined effect with the average production of acres was about 0.046 million pounds, and its combined effect with the mezzanic price per unit of output was about 2.020 million pound.

Its successive impact with its relationship with other elements amounted to about 3.110 million pounds. The change in the element of average acre production by 1.515% contributed 2.092% of the value of the change in the monetary economic importance of the crop, where its separate effect was about 0.322 million pounds, and its combined effect with the price of the crop was about 0.625 million pounds, and its successive impact with its relationship with the other elements amounted to about 0.948 million pounds.

Table 9: Relative changes in the elements of monetary economic importance of sesame crop in the Arab Republic of Egypt during the period (2000-2020).

Elements of economic importance of the crop		Average (2000-2010) R0 (base period)	Average (2011-2020) R1 (comparison period)	Index (%)
Area (1,000 acres)	A	68.545	71.900	104.895
Average acre production (quintar)	M	0.528	0.536	101.515
The price (pounds/quintar)	P	588.909	1729.500	293.679
Production value (thousand pounds)	R	21313.653	66652.163	312.721

Source: Collected and calculated from table (4) data in the annex .

Finally, the results indicate that 91.048% of the value of the change, the increase in the monetary economic importance of the crop, which is equivalent to 41.279 million pounds due to the change . the increase in the element of the crop's mezze price by 212.721% from its level in the base period, and it is clear that the price of the crop plays a key role in increasing the monetary economic importance of the crop.

Table 10: Results of the analysis of the total change in the components of the economic importance of sesame crop in the Arab Republic of Egypt during the period (2000-2020).

Elements of monetary economic importance	The absolute impact of changing elements on economic importance (in thousand pounds)				Weight Qualitative (%)
	Separate measurement method	Common effect between elements		Sequential measurement method	
		M	P		
A	1043.217	46.420	2020.488	3110.125	6.860
M	322.934	--	625.455	948.389	2.092
P	41279.996	--	--	41279.996	91.048
R	42646.147	46.420	2645.943	45338.510	100.000

Source: Collected and calculated from table 9 data.

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Appendix

Table 1: Development of cultivated area, Feddan productivity, total production and the mezze price of cotton crop during the time period (2000-2020).

The year	Cotton			Farm Price Pound/quintal	Value of return Pound/Acre
	Area 1,000 acres	Production 1,000 quintars	Productivity quintar/acre		
2000	614	582	0.948	350.1	203758
2001	662	569	0.860	350.1	199207
2002	518	554	1.069	410	227140
2003	731	532	0.728	535	284620
2004	706	766	1.085	615	471090
2005	535	546	1.021	733	400218
2006	715	785	1.098	780	612300
2007	655	560	0.855	671	375760
2008	559	560	1.002	806	451360
2009	571	560	0.981	677	379120
2010	313	193	0.617	785	151505
2011	284	281	0.989	1066	299546
2012	369	187	0.507	1169	218603
2013	520	1820	3.500	1474	2682680
2014	333	211	0.634	1352	285272
2015	287	134	0.467	1245	166830
2016	369	1365	3.699	2738	3737370
2017	240	83	0.346	2860	237380
2018	336	160	0.476	3018	482880
2019	239	101	0.423	2894	292294
2020	237	217	0.916	2974	645358

Source: Ministry of Agriculture and Land Reclamation, EGYPT . Central Administration of Agricultural Economy, Agricultural Statistics Bulletin, miscellaneous numbers.

Table 2 : Development of cultivated area, Feddan productivity, total production and the mezze price of the linen crop (straw, seed) during the time period (2000-2020).

The year	Area acres	Production		Productivity		Farm Price		Value of return (pound)	
		straw (ton)	seed (Ardeb)	straw (ton/fe.)	seed (Ardeb/fe.)	straw (pound/ton)	seed (pound/Ardeb)	straw	seed
2000	9505	32097	55295.082	3.377	5.82	240.4	168.6	7716118.8	9322750.82
2001	18204	62533	106975.410	3.435	5.88	242.7	169.4	15176759	18121634.43
2002	21267	78410	123991.803	3.687	5.93	244.9	172.4	19202609	21376186.89
2003	26438	95647	151918.033	3.618	6.04	276.4	186.2	26436831	28287137.7
2004	40789	177663	249885.246	4.356	6.13	350.6	198.5	62288648	49602221.31
2005	16345	69094	92868.852	4.227	5.68	437	245.6	30194078	22808590.16
2006	15613	62065	80008.197	3.975	5.13	467	270.3	28984355	21626215.57
2007	20820	92072	100213.115	4.422	4.82	480	286	44194560	28660950.82
2008	20102	86833	97368.852	4.320	4.84	623	402	54096959	39142278.69
2009	12784	55359	64655.738	4.330	5.06	662	499.8	36647658	32314937.7
2010	7951	33562	37311.475	4.221	4.69	674	520.7	22620788	19428085.25
2011	8068	35704	37180.328	4.425	4.62	758	316	27063632	11748983.61
2012	10181	51742	46926.230	5.082	4.62	801	672	41445342	31534426.23
2013	3405	13690	15909.836	4.021	4.67	838	719	11472220	11439172.13
2014	6887	28351	36762.295	4.117	5.34	848	742	24041648	27277622.95
2015	7445	31547	40860.656	4.237	5.49	870	772	27445890	31544426.23
2016	12379	51028	63385.246	4.122	5.14	910	878	46435480	55652245.9
2017	14407	71101	69040.984	4.935	4.65	952	1276	67688152	88096295.08
2018	13438	66266	59918.033	4.931	4.46	1296	1179	85880736	70643360.66
2019	25018	105509	146393.443	4.217	5.85	1589	1311	167653801	191921803.3
2020	23594	103441	141008.19	4.384	5.98	1604	1344	165919364	189515016.4

Source: Ministry of Agriculture and Land Reclamation, EGYPT . Central Administration of Agricultural Economy, previous reference.

Table 3 : Development of cultivated area, field productivity, total production and the mezze price of soybean crops during the time period (2000-2020).

The year	**Soybean**			**Farm Price Pound/ton**	**Value of return Pound**
	Area 1,000 acres	**Production 1,000 ton**	**Productivity ton/acre**		
2000	11	12	1.091	900	10800
2001	14	15	1.071	900	13500
2002	9	10	1.111	1150	11500
2003	12	14	1.167	1665	23310
2004	14	17	1.214	1860	31620
2005	19	28	1.474	1858	52024
2006	34	43	1.265	1908	82044
2007	35	51	1.457	1953	99603
2008	17	22	1.294	2161	47542
2009	39	54	1.385	2207	119178
2010	20	29	1.450	2438	70702
2011	17	26	1.529	2866	74516
2012	26	43	1.654	4117	177031
2013	22	29	1.318	4210	122090
2014	17	25	1.471	4261	106525
2015	22	32	1.455	4336	138752
2016	28	39	1.393	4391	171249
2017	25	39	1.560	5357	208923
2018	38	46	1.227	6367	292882
2019	29	36	1.228	6438	231768
2020	27	39	1.444	6782	264498

Source: Ministry of Agriculture and Land Reclamation, EGYPT . Central Administration of Agricultural Economy, previous reference.

Table 4 : Development of cultivated area, field productivity, total production and the mezzanine price of Sesame crop during the time period (2000-2020).

The year	Sesame			Farm Price (Pound/ton)	Value of return (Pound)
	Area (1,000 acres)	Production (1,000 ton)	Productivity (ton/acre)		
2000	56	33	0.589	399	13167
2001	64	34	0.531	406	13804
2002	72	36	0.500	411	14796
2003	67	34	0.507	418	14212
2004	72	36	0.500	461	16596
2005	72	36	0.500	491	17676
2006	70	37	0.529	514	19018
2007	67	37	0.552	708	26196
2008	75	41	0.547	809	33169
2009	73	37	0.507	908	33596
2010	66	36	0.545	953	34308
2011	98	50	0.510	972	48600
2012	87	46	0.529	1357	62422
2013	80	43	0.538	1393	59899
2014	57	31	0.544	1429	44299
2015	60	33	0.550	1478	48774
2016	64	37	0.578	1520	56240
2017	62	35	0.565	1952	68320
2018	66	35	0.530	2188	76580
2019	77	40	0.519	2356	94240
2020	68	34	0.500	2650	90100

Source: Ministry of Agriculture and Land Reclamation, EGYPT . Central Administration of Agricultural Economy, previous reference.

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