Subsidization Agricultural Production Requirements for the Most Important Strategic Crops in Egypt

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ABSTRACT

Many countries follow support policies directed at the agricultural sector, and support takes different forms and is applied through multiple means and methods. This aims to stimulate production to achieve continuous food security and expand the cultivated areas of these crops, thus increasing the value of national agricultural production. Since the second half of the 1980s, agricultural policy began to implement the economic reform program to implement subsidies on agricultural production requirements (such as: seeds, fertilizers, pesticides), in order to support agricultural production requirements that affect the prices and costs of the most important strategic agricultural crops in Egypt.

The research problem was limited to the high prices of agricultural production requirements, which represent the most important problems facing farmers in Egypt, and also the problem of fertilizers in terms of their high prices and unavailability, in addition to the high rental prices of agricultural machinery, which leads to high agricultural costs and a reduction in the cultivated areas of crops, in particular Strategic crops. Financing strategic crops amounted to more than 6 billion pounds annually, with a soft interest rate of 5%, in addition to the state bearing a subsidy worth 7% in recent years, equivalent to more than 500 million pounds annually, while the number of beneficiaries reached about 600,000 farmers. Therefore, farmers must be supported by providing production requirements of fertilizers, seeds, and pesticides at low prices and high quality, in the winter and summer seasons, to increase the area and productivity of crops.

The research aims to identify the methods followed by the state in its support policy for agricultural production requirements for Egyptian strategic agricultural crops, and to work to protect agricultural producers from price fluctuations and increase production for those crops during all agricultural seasons.

The most important results of the research were that the implementation of cash support requires the presence of detailed data on those eligible for subsidy, and increasing subsidy for some agricultural production requirements, especially for strategic crops, encourages farmers to increase productivity, and this is evident in the wheat crop, as it led to an increase in local production from 9.2 million tons in 2014 to 10 million tons in 2022. It also becomes clear that there is a fluctuation in the value of support directed to farmers, which affects the rise in the costs per acre of strategic crops, especially wheat. The research concluded that when measuring the development of the value of support directed to farmers, it did not give an appropriate statistical picture due to the fluctuation of data up and down over the course of time, the high cost of agricultural production inputs for strategic crops such as wheat and corn, and increased inflation rates.

Keywords: Agricultural Production, Subsidy, Strategic Crops, Subsidies.

INTRODUCTION

Agricultural production requirements are a major component of the measures to subsidy sustainable agricultural development and achieve food security, which is currently the concern of the political leadership in Egypt. The Ministry of Agriculture provides Subsidy to farmers by providing basic production requirements for agriculture at reduced prices and high quality to ensure a good crop with high productivity. Hence, since the second half of the 1980s, Egyptian agricultural policy began implementing an economic reform program to implement Subsidy policies on agricultural production requirements (such as: seeds, fertilizers, pesticides), which affect the prices of the most important strategic agricultural crops in Egypt. This aims to stimulate production to achieve continuous food security and expand the cultivated areas of these crops, thus increasing the value of national agricultural production. From an economic perspective, subsidy is considered an intervention by the state in market forces and addressing the deviation (distortion) of the balance that can result when the forces of supply and demand meet, and the subsequent determination of prices and production.

Research Problem:

The research problem is limited to the high prices of agricultural production requirements, which represent the most important problems facing farmers in Egypt, and also the problem of fertilizers in terms of their high prices and lack of availability, in addition to the high rental prices of agricultural machinery, which leads to high agricultural costs and a reduction in the cultivated areas of crops, especially crops. The strategy, financing

strategic crops amounted to more than 6 billion pounds annually, with a soft interest rate of 5%, in addition to the state bearing a subsidy worth 7% in recent years, equivalent to more than 500 million pounds annually, while the number of beneficiaries reached about 600,000 farmers (Cabinet Meeting No. 209, 2022). Therefore, farmers must be supported by providing production requirements of fertilizers, seeds, and pesticides at reduced prices and high quality, in the winter and summer seasons, to increase the area and productivity of crops.

Research Aims:

The research aims to identify the methods followed by the state in the policy of supporting agricultural production requirements for Egyptian strategic agricultural crops, protecting agricultural producers from price fluctuations and increasing production for those crops during all agricultural seasons, which in turn leads to the expansion of the cultivated areas of those crops, and thus increasing the value Egyptian agricultural production.

Research Methods and Data Sources:

The research relied on descriptive and quantitative analysis methods to describe and analyze the variables under study, including estimating percentages, averages, relative importance, and analyzing simple and multiple regression models in their linear and non-linear forms.

The research also derived its data from various secondary sources, such as: the Ministry of Agriculture and Land Reclamation, the Central Agency for Public Mobilization and Statistics, the Ministry of Finance- the State Budget and the Center for Information, subsidy and decision making- the Egyptian council of ministers. Research, reports and scientific theses related to the subject of the research were also used. During the study period (2007/2008-2023/2024).

Discussion and Conclusion:

Terms and Concepts about Subsidy:

Subsidy Concept:

Subsidy is defined as everything that the state's general budget bears in terms of price differences for goods and services from their economic prices. Subsidy is one of the most important economic policy tools that the government uses to follow market mechanisms for the purpose of achieving economic or social goals in development plans (Ministry of Finance, 2022).

Subsidy Forms:

Subsidy is divided into two main types: in-kind Subsidy and cash subsidy.

(1) In-kind Subsidy:

It means providing goods and services at low prices and is considered the most common type, especially in the case of high inflation, where the value of direct monetary subsidy is eroded. In-kind Subsidy is provided in different ways.

A - General price Subsidy: Where goods are provided at prices lower than the market price and it is criticized that the subsidy reaches those who do not deserve it.

B - Cards: Distributing specific shares of goods at prices lower than the market price.

C - Coupons: Distributing coupons with a specific monetary value to target groups.

D- Self-targeting: Subsidizing goods consumed by the poor in greater proportions.

(2) Cash Subsidy:

It is intended to provide cash assistance to targeted groups to raise their standard of living.

Requirements for Implementing the Cash Subsidy System in Developing Countries:

1) Establishing an institutional framework and increasing penalties in the event of manipulation by beneficiaries.
2) Identifying target groups, whether owners of dwarf areas or those cultivating strategic crops.
3) Providing an accurate information system about eligible categories to facilitate the disbursement of cash amounts.
4) Providing widespread banking infrastructure, especially near the areas where the targeted people live (Abdal-Hamid, 2012).

Advantages & Disadvantages of Cash and in-kind Subsidy:

First: Cash Subsidy:

Advantages:

1) Achieving the principle of product sovereignty, where beneficiaries have the freedom to determine the aspects of spending subsidy.
2) It does not require large administrative costs, as there are no costs for transporting goods and services or delivering them to beneficiaries.
3) If monetary subsidy is spent locally, multiplier effects may appear in generating streams of income and spending in the economy.
4) It does not result in price distortion, as there are no two prices for the same commodity.
5) The expected ease of spending required to apply cash subsidy.
6) It helps in macroeconomic stability so that monetary subsidy can be increased in times of declining economic performance or standard of living.

Defects:

1)Implementing cash subsidy programs requires the availability of detailed data on those eligible for subsidy.
2)It may contribute to raising the general level of prices.
3)This cash can be spent on unnecessary goods.

   Politically unfavorable.

Second: In-kind Subsidy:

Advantages:

1)Ensuring the provision of goods at low prices.
2)It contributes to improving the standard of living for low-income people.
3)He has political preference.

Defects:

1)Some subsidized goods leak into the black market.
2)It may lead to price distortion.
3)It requires greater administrative expenses than cash Subsidy.

Criteria for Determining Target Groups for Subsidy:

The main goal of developing criteria for identifying target groups is to increase the effectiveness and efficiency of subsidy programs. In general, there are five mechanisms for identifying target groups, which are as follows:

1)**Averages Mechanism:** This method is based on setting a minimum limit for farm income, so that farmers whose incomes exceed this limit are excluded. This mechanism is used with cash subsidy programs. The use of this method requires the availability of accurate and updated data on income (amount of income and its sources - etc.). However, it is difficult to apply this mechanism in developing countries due to the lack of an accurate database on income (Steenblik, 2005).
2)**The Mechanism of Approximate Indicators:** This mechanism is distinguished from the mechanism of averages in that it can be applied in developing countries where accurate data on income are not available. This method is based on the use of approximate indicators of the farmer's income level, such as the extent to which he practices any economic activity, the type of this activity, the type of housing, as well as the size of capital assets which the farmer owns. Data on these indicators can be collected by designing questionnaire forms that are collected by specialized employees (United Nations Development Programme, 2008).
3)**Community Participation Mechanism:** According to this mechanism, local authorities and civil society organizations identify groups deserving of subsidy, as is the case in many countries of the world.

4)**The Self-targeting Mechanism:** The concept of self-targeting refers to directing subsidy to the groups and crops targeted by the subsidy, thus reducing the chances of subsidy leaking to aspects other than its intended purpose. The self-targeting method is characterized by the low amount of information required to implement it compared to methods for identifying other target groups.
5)**Mechanism of Characteristics of Target Groups:** This method is based on identifying target groups for Subsidy based on the social and geographical characteristics of these groups.

Ways to Subsidy Agricultural Production Prices:

(1) Subsidy prices of final output.

(2) Subsidy the prices of production inputs.

First: Supporting Final Output Prices:

Advantages:

1)High prices due to the price subsidy policy encourage the expansion of the cultivation of subsidized crops, which leads to increased production and improved living conditions for producers.
2)Increasing production facilitates the state's mission in securing the population's food needs and achieving stable food security, thereby reducing the volume of imports from the global market and eliminating economic dependency.
3)The price subsidy policy leads to providing the rate of accumulation required to develop agriculture, as rising prices lead to producers purchasing new machines and equipment and using modern technologies that ultimately lead to increased productivity and then production.

Defects:

1)The policy of supporting the final output leads to an increase in the prices of agricultural products with respect to the consumer, especially in countries that do not follow a policy of supporting consumer prices. While this policy is beneficial to the producer, it is harmful to the consumer, who has begun to allocate a high percentage of his income to purchase agricultural food crops.
2)This policy often does not take into account the characteristics related to agricultural production, such as varying land fertility, different weather, different irrigation methods, etc., in order to establish a price policy capable of stimulating agricultural production (Al-Mulla and Al-Azizi, 2008).
3)This policy leads to an increase in government expenditures, which burdens the state budget, and this may be at the expense of other economic activities. In addition, the increase in government expenditures leads to an increase in overall demand

and then a continuous rise in the general level of prices, which increases inflation.

4) Agricultural production is often characterized, especially in developing countries, by not responding to price increases due to lack of elasticity of supply due to various reasons, including insufficient water, land, mechanization, and improved seeds. Therefore, their lack or non-availability causes little or no elasticity of supply.

5) Supporting the price of final output significantly leads to the emergence of speculation in agricultural lands due to the emergence of the effects of differential and absolute rent together. The high subsidy prices for agricultural products result in the capitalization of these prices in the values of agricultural lands, so the differential and absolute rents for these lands rise together.

Second: Supporting the Prices of Production Inputs:

Advantages:

1) This policy is followed with the aim of increasing agricultural productivity by intensifying the elements of production per unit area, given that what intensive production achieves in agriculture covers the loss resulting from reducing the prices of means of production, and it also motivates farmers to use modern mechanization, fertilizers and pesticides. This leads to developing agriculture, expanding the production base, and reducing the final cost, which in turn is reflected in consumer prices for those agricultural products.

2) The effect of this policy is better on intensifying production and more effective development than the effect of the policy of raising the prices of final output in this area, especially in developing countries.

Defects:

1) Reducing input prices cannot stimulate the production of a specific crop if there are difficulties in limiting the subsidized inputs in the production of the crop in question. leakage may occur when one of the subsidized supplies is diverted from its original purpose to producing another crop due to a more profitable opportunity.

2) Excessive subsidy for agricultural production requirements encourages the wasteful and incorrect use of resources, which leads to negative effects on soil fertility.

Development of Subsidy Directed to the Agricultural Sector:

Many governments in various economies, both developed and developing, follow a policy of subsidy in various forms for agricultural production, which is an economic phenomenon that has emerged due to

interference in economic activity as a result of the economic crises they are experiencing (Abdal-Hamid, 2012).

Subsidy takes different forms and is applied in various ways, such as supporting agricultural production with the aim of empowering projects and other sectors, or making it more attractive to attract workers. The subsidy may aim to stimulate production indirectly by encouraging exports through the use of various means such as exemption from export duties or production taxes. It has sometimes even reached the point of paying subsidies to exporters to enable them to export their goods at lower prices (that is, at a lower cost to them than competing in foreign markets). In order to obtain foreign currencies to subsidy the trade balance) (World Trade Report, 2006).

The Current Status of the Subsidy Provided to Farmers in the State's General Budget:

Table (1) shows the Subsidy numbers directed to farmers in the state's general budget during the period from the year (2007/2008) to the year (2023/2024) in million pounds, and its relative importance to the total amounts directed to subsidy, grants, and social benefits in the successive budgets during that period, which shows that the subsidy. The amount paid to farmers during that period ranged between 263 million pounds in the general budget for the fiscal year (2010/2011), and about 545 million pounds according to the financial statement of the state's general budget proposed for the current year (2023/2024), an increase estimated at about 282 million pounds, with an increase rate estimated at about 51.74%. About the budget for the fiscal year (2010/2011).

The percentage of subsidy directed to farmers for the total subsidy, development, and social benefits item ranged between about 0.21% in the budget for the year (2010/2011), and decreased to about 0.10% in the current budget for the fiscal year (2023/2024). The average value of subsidy directed to farmers was about 1.39 billion pounds during the study period, while the average value of total subsidy and grants was about 227.94 billion pounds during the study period, as shown in Table (1).

Supporting the Agricultural Sector in Egypt:

The state provides Subsidy for some agricultural activities, such as supporting the difference in cotton prices and resistance to its pests. Beginning in the year (2011/2012), the state also supported agricultural crops, represented by the wheat crop, at a value of 2 billion pounds, and it increased to about 8 billion pounds in 2022. As for supporting the fund The agricultural budget increased from about 83.8 billion pounds in the year (2007/2008) to about 13 million pounds in the year (2016/2017), while it increased to about 15 million

pounds by the current budget for the year (2023/2024), as mentioned above. The state supported cotton price differences amounted to about 134.8 million pounds in the year (2007/2008). The state did not provide subsidy for cotton price differences during the period (2008/2009) and (2009/2010), while the value of supporting cotton price differences amounted to about 200. One million pounds in the year (2011/2012) and increased to about 300 million in the year (2016/2017) (Information, Subsidy and Decision Center, 2012).

The state contributed to the costs of resisting cotton pests, reaching 50 million pounds in the last budget for year (2022/2023). The state receives wheat from farmers, equivalent to 1,500 pounds per ardeb, and the equivalent of 10,050 thousand pounds per ton in the (2022/2023) agricultural season, in addition to the marketing commission that is paid to marketers at the rate of 100 pounds per ton.

It was shown from Table (2) that the most appropriate mathematical form expressing the directional relationship with regard to the value of subsidy directed to farmers is the non-linear (quadratic) form, and the linear form is the most appropriate for the total subsidy and grants. It was found that the total value of subsidy directed to farmers began to increase by about 377.37 million pounds annually until the year (2009-2010) and then began to decrease by 40.57 million pounds annually until the end of the period. The value of (F) indicates that the statistical significance of the estimated model as a whole remains stable. The value of the adjusted coefficient of determination indicates that about 28% of the change in the value of subsidy directed to farmers is due to factors reflected by the time component.

Table 1. Subsidy directed to farmers in the state's general budget during the period (2007/2008-2023/2024)

Years	The value of Subsidy provided to farmers (one million pound)	Total Subsidy grants and social benefits (one million pound)	% of Total Subsidy, grants and social benefits
2007/2008	342.6	64280.0	0.53
2008/2009	707.6	133557.6	0.53
2009/2010	805	83883	0.96
2010/2011	263	124288	0.21
2011/2012	533	132928	0.40
2012/2013	573	142986	0.40
2013/2014	2978	148091	2.01
2014/2015	3353	229589	1.46
2015/2016	3726	225531	1.65
2016/2017	5180	202252	2.56
2017/2018	1065	310616	1.10
2018/2019	1065	315149	0.34
2019/2020	565	295171	0.19
2020/2021	665	316504	0.21
2021/2022	665	310929	0.21
2022/2023	545	319952	0.17
2023/2024	545	519222	0.10
Average	1386.84	227936.98	0.77

Source: Collected and calculated from the Ministry of Finance's data, the financial statement of the state's general budget - Annual issues.

Table 2. General time trend equations for the value of Subsidy provided to farmers and the total Subsidy for grants and social benefits in the state's general budget during the period (2007/2008-2023/2024)

N	Description	Equation	R^2	F
1	The value of Subsidy directed to farmers	$Y = -953.44 + 733.37\,X - 40.57\,X^2$ (2.821)** (-2.891)**	0.28	4.179
2	The value of total Subsidy and grants	$Y = 35345.21 + 21399.09\,X$ (1.541) (9.562)**	0.85	91.439

Y = indicates the estimated value of the variable under study, one million pounds.

X = indicates the time variable

The value between ( ) indicates the calculated t value,

where ** is significant at 0.01, significant at 0.05.

Source: Collected and calculated from Table No. (1)

It was also found that the total value of subsidy and grants has taken an increasing trend by 21.39 billion pounds annually, and the F value indicates that the statistical significance of the estimated model as a whole has been proven. The value of the adjusted coefficient of determination indicates that about 85% of the change in the value of total subsidy and grants is due to factors reflected by the time component.

Applying the Cash Subsidy System to Agricultural Crops:

(1). The Impact of the Wheat Monetary Subsidy Policy on the Egyptian Economy:

Wheat is considered one of the most important food commodities that the majority of the population in Egypt depends on daily to obtain thermal energy and protein. It is the first strategic food crop in Egyptian food security. Egypt's consumption of wheat has reached about 11.1 million tons, and the volume of local production is estimated at about 9.2 million tons, thus covering production. Only about 83% of the volume of consumption during the year 2014, and wheat production increased to reach 10 million tons and consumption to 20.5 million tons for the year 2022. Thus, the volume of local production coverage decreased to 49%, which decreased from 2014 despite the increase in production and in view of the burden placed on the state budget as a result of the process of importing wheat. The state bears most of the value paid from the import process, especially since wheat accounts for the largest share of the value of the subsidy allocations, as the subsidy provided for a loaf of bread is estimated at about 18.5 billion pounds during the year 2014 and rose to 92 billion pounds in 2023, in order to ensure that the loaf of bread reaches consumers at an appropriate price.

This burden will increase as a result of the increase in the Egyptian import bill, especially in light of the upward trend of rising international wheat prices on the one hand and the decline in the exchange rate of the Egyptian pound on the other hand, and the consequent decrease in the average per capita share of wheat or an increase in the value of the wheat import bill, and then the prices will rise. Bread flour in Egypt is a certain possibility, which foretells the occurrence of serious and successive social and political crises within Egyptian society. The importance of studying the wheat subsidy policy and its impact on the Egyptian economy stems from the fact that Egypt is one of the main wheat importing countries, as it is considered the first country in the world to import wheat, and with the changes that these global markets are suffering from, whether from a decrease in global grain production or an increase in

global imports or use of wheat. Some countries use grains to produce biofuel, which has contributed to reducing their supply. In addition to climate change, these factors pose a threat to securing our food needs for wheat, which requires the need to identify the risks that Egypt is likely to face as a major wheat importing country, and then determine the necessary ways to confront them, such risks.

Subsidy for the wheat crop was directed in the financial statement for the year (2016/2017), estimated at about 3.4 billion pounds, while the value of subsidy in the budget for the year 2015/2016 amounted to about 2.4 billion pounds, with a growth rate estimated at about 56%, and it rose in the year (2022/2023) budget to about 12.7 billion pounds with a capacity growth rate of 26.77%.

(2). The Impact of the Policy of Monetary Subsidy for Sugarcane on the Egyptian Economy:

Due to the strategic importance of the sugarcane crop, the council of Ministers decided to increase the price of purchasing a ton from the farmer this year from 1,100 pounds, instead of 810 pounds in the previous year, an increase of 290 pounds, as the cost of an acre reaches 25 thousand pounds, so that the farmers of the sugarcane crop can bear the costs of productivity. High prices, as prices rise and inflation rates increase, will lead to farmer's reluctance to farm, which means that sugar factories stop working and the subsequent rise in unemployment rates (Policies of the Subsidy system in the agricultural sector, 2016).

The study prepared by the sugar crops Association recommended that the subsidy for the price of one ton of sugarcane range between 500 and 600 pounds, and that the profit per acre should not exceed 2,000 pounds, which is an insufficient profit for the farmer in light of the continuous rise in prices. Sugar cane is received, provided that the Egyptian sugar and integrated industries company bears an amount of 300 pounds per ton, and the Ministry of Finance pays an amount of 100 pounds to farmers for each ton of cane supplied.

Subsidy for the sugarcane crop was directed in the financial statement of the general budget for the year (2023/2024), estimated at about 2 billion pounds, while it did not appear in some budgets of previous years (Rihan and Bawady, 2023).

(3). The Impact of the Cotton Monetary Subsidy Policy on the Egyptian Economy:

Cotton cultivation has been exposed for several decades to many problems that negatively affected the quality of the cotton grown, and extended to affecting the areas cultivated with a crop that was at one time Egypt's first crop. Because cotton is one of the crops on

which several industries are based, the textile industry sector was shaken by its dependence on local cotton, which led to an increase in the import of yarn and cotton from abroad, due to the high prices of local cotton compared to imported ones.

The area cultivated with the Egyptian cotton crop decreased by 32.4%, as the area in 2015 reached about 248 thousand acres, and production reached about 1.7 million quintals, compared to 2014, when the area amounted to about 367 thousand acres, and production reached about 2.2 million quintals, and the area reached about 334 thousand Acres in 2022 and production of 1.8 million quintals.

The problem of Egyptian cotton dates back to the liberalization of the cotton trade in 1994, which led to higher production costs compared to most cotton-producing countries. In addition to farmers suffering in marketing and difficulty obtaining subsidy from the government (Information and Decision Subsidy Center, 2021).

The Ministry of Agriculture and Land Reclamation announced the price of cotton for the current 2016 season, reaching 6,400 pounds for lower Egypt and 5,200 pounds for Upper Egypt. The financial budget provides Subsidy for cotton price differences during the fiscal year (2015/2016), which amounted to about 825 million pounds, with a decrease in subsidy estimated at about 1,755 pounds. The state also provides subsidy to combat pests. Cotton amounted to about 62 million pounds during the 2016 budget, and it decreased in the current budget for 2023 to 50 million pounds (Ministry of Finance, 2022).

(4). Impact of Cash Subsidy Policy for Fertilizers:

Egypt produces about 18 million tons of fertilizers, while our consumer needs for urea and nitrate fertilizers reach 9 million tons. However, farmers suffer from the high costs of fertilizers and their absence from the markets during fertilization periods. As a result of the leakage of subsidized fertilizers to the black market, fertilizer factories are manipulating non-compliance with supplying the required quantities, citing the lack of (subsidized) natural gas, which these factories use in manufacturing fertilizers, both "summer and winter", as they smuggle more than 40% of the production to the black market to be sold at double prices.

The Impact of Eliminating Price Subsidies for Goods and Services in the Agricultural Sector:

There is no doubt that the policy of eliminating government subsidies on goods and services within the framework of the economic reform program may have many economic and social impacts. Reducing subsidies for farmers will lead to an increase in the prices of production inputs that are less subsidized, such as

fertilizers and seeds, in addition to an increase in the costs of agricultural operations as a result of the reduction in energy subsidies, the rise in the price of diesel used to operate water and irrigation machines, and tractors, and the reduction in subsidies for farmers represent painful blows that will result in a decrease in farmer income (Ministry of Agriculture and Land Reclamation, 2018).

The state seeks to reduce the total budget deficit to the minimum. Therefore, the study assumes the cancellation of Subsidy directed to the agricultural sector and its effects on the sector. It turns out that the state directs direct Subsidy and indirect subsidy to the agricultural sector during the state's general budget (2016/2017). Direct subsidy is estimated at about 15 billion Egyptian pounds, with regard to items supporting the local wheat crop at about 11 billion pounds, supporting the local sugarcane crop at about 2 billion pounds, supporting interest rate differences for plant production loans at about 600 million pounds, and supporting cotton price differences and pest resistance at about 50 million pounds, and supported the agricultural budget fund by about 15 million pounds (Abbas et al., 2022).

This is directed to indirect subsidy to the agricultural sector, represented by subsidy for research and extension for the development of plant production services, at about 600 million pounds, and Subsidy for veterinary and fishery services at about 73 million pounds. The Ministry of Agriculture also supervises, with the Ministry of Irrigation, the development of irrigation and drainage networks and the development of water resources, and subsidy is directed at about 3 billion. The Ministry of Agriculture also benefits from subsidy directed to the industrial sector, represented by the fertilizer industry, at about 2.7 billion pounds.

Development of the Value of Agricultural Production Inputs:

It is clear from Table (3) that the average value of agricultural production requirements reached about 344.26 billion pounds during the period 2008 to 2020. This average falls between a minimum of about 185.7 billion pounds in 2008 and a maximum of about 595.4 billion pounds in 2020. The value of agricultural production inputs represents about 185.39% of the average compared to the base year in 2008.

By studying the general time trend of the value of agricultural production requirements shown, the estimates indicated that the value of agricultural production requirements during the period 2008-2020 shows that the linear picture is the best form that fits the nature of the data, as production increases by an amount of about 34.31 billion pounds annually until the end of the period. It also shows that the statistical significance

of the parameters is proven. The estimated model, the indicator statistic f indicates that the statistical significance in the estimated model as a whole is proven, and the adjusted coefficient of determination shows that about 93% of the changes occurring in the value of production inputs are due to factors that are explained by time, as shown in Table (4).

Evolution of Net Agricultural Income:

It is clear from Table (3) that the average value of net agricultural income reached about 227.12 billion pounds during the period 2008 to 2020. This average falls between a minimum of about 136.8 billion pounds in 2008 and a maximum of about 364.6 billion pounds in 2020, and the value of net agricultural income represents about 227.12% of the average compared to the base year in 2008.

By studying the general time trend of the value of net agricultural income shown, the estimates indicated that the value of net agricultural income during the period 2008-2020 shows that the linear picture is the best form that fits the nature of the data, as net agricultural income increases by an amount of about 20.98 billion pounds annually until the end of the period, as shown by the proven significance. The statistics for the parameters of the estimated model indicate that the statistical significance of the estimated model as a whole is proven. The adjusted coefficient of determination shows that about 91% of the changes occurring in the value of net agricultural income are due to factors that are explained by time As shown in Table (4).

Evolution of the Value of Subsidies Farmers:

It is clear from Table (3) that the average value of support for farmers reached about 1.63 billion pounds during the period 2008 to 2020. This average falls between a minimum of about 0.260 billion pounds in 2011 and a maximum of about 5.18 billion pounds in 2017.

The value of support to farmers represents about 475.01% of the average compared to the base year in 2008, as shown in Table (4).

By studying the general time trend in the value of farmers' subsidy shown, the estimates indicated that there is no appropriate statistical picture for these data.

Table 3. Development of the value of agricultural production inputs, net income, support to farmers, agricultural area and crops during the period from (2008-2020)

a Record	Crop area (billion acres)	a Record	Agricultural area (billion acres)	a Record	The value of Subsidy provided to farmers billion) (pounds	a Record	Value of net agricultural income) one billion pounds(	a Record	The value of agricultural Subsidy farmers (one billion pounds)	years
100	0.0151	100	0.00843	100.00	0.34	100	136.8	100	185.7	2008
100.66	0.0152	104.27	0.00879	206.54	0.71	100.95	138.1	101.99	189.4	2009
101.99	0.0154	103.68	0.00874	234.97	0.81	100.95	138.1	112.76	209.4	2010
101.32	0.0153	102.25	0.00862	76.77	0.26	110.16	150.7	134.63	250	2011
101.99	0.0154	104.39	0.0088	155.58	0.53	131.36	179.7	144.00	267.4	2012
102.65	0.0155	106.17	0.00895	167.25	0.57	139.47	190.8	152.07	282.4	2013
102.65	0.0155	105.69	0.00891	869.24	2.98	148.98	203.8	164.46	305.4	2014
103.31	0.0156	107.95	0.0091	978.69	3.35	163.52	223.7	172.05	319.5	2015
104.64	0.0158	107.95	0.0091	1087.57	3.73	164.40	224.9	195.96	363.9	2016
105.96	0.016	108.42	0.00914	1511.97	5.18	240.64	329.2	254.01	471.7	2017
106.62	0.0161	109.13	0.0092	310.86	1.07	237.79	325.3	269.57	500.6	2018
107.28	0.0162	110.79	0.00934	310.86	1.07	253.51	346.8	287.88	534.6	2019
109.27	0.0165	112.10	0.00945	164.92	0.57	266.52	364.6	320.62	595.4	2020
103.72	0.016	106.37	0.009	475.01	1.63	166.02	227.12	185.39	344.26	المتوسط

Source: 1-Collected and calculated from World Bank data on the Internet, worldbank.org.
2.Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Economics Bulletins, Various issues
3-Collected and calculated from the Ministry of Finance's data, the financial statement of the state's general budget - Annual numbers.

Table 4. General time trend equations for the value of support for production requirements, net income, agricultural area, and crops during the period (2008-2020)

N	Description	Equation	R^2	F
1	The value of agricultural subsidies inputs	Y=104.10+ 34.309 X (4.926)**(12.886)**	0.93	166.060
2	Value of net agricultural income	Y=80.273+ 20.98 X (11.086)**(5.344)**	122.891	122.891
3	Value of agricultural area	Y=8.47 + 0.072 X (165.016)**(11.067)**	4.179	4.179
4	Value of crop area	Y=14.92+ 0.11 X (12.384)**(220.712)**	91.439	91.439

Y = Indicates the estimated value of the variable under study, one million pounds.

X = Indicates the time variable

  The value between ( ) indicates the calculated t value,

Where ** is significant at 0.01, significant at 0.05.

Source: Collected and calculated from Table No. (1)

Development of the Value of Agricultural Area:

It is clear from Table (3) that the average value of agricultural area reached about 0.009 billion acres during the period 2008 to 2020. This average falls between a minimum of about 0.00843 billion acres in 2008 and a maximum of about 0.00945 billion pounds in 2020, and the average value of the agricultural area represents about 106.37% of the average compared to the base year in 2008.

By studying the general time trend of the value of the agricultural area shown, the estimates indicated that the value of the agricultural area during the period 2008-2020 shows that the linear form is the best form that fits the nature of the data, as the area increases by an amount of about 0.072 billion acres annually until the end of the period. It also shows that statistical significance for the parameters of the estimated model is proven. The f-index statistic indicates that the statistical significance of the estimated model as a whole is consistent, and the adjusted coefficient of determination shows that about 91% of the changes occurring in the value of agricultural area are due to factors explained by time, as shown in Table (4).

Evolution of the Value of Crop Area:

It is clear from Table (3) that the average value of crop area reached about 0.016 billion acres during the period 2008 to 2020. This average falls between a minimum of about 0.0151 billion acres in 2008 and a maximum of about 0.0165 billion pounds in 2020. The average value of the agricultural area represents about 103.72% of the average compared to the base year in 2008.

By studying the general time trend of the value of the agricultural area shown, the estimates indicated that the value of the agricultural area during the period 2008-2020 shows that the linear form is the best form that fits the nature of the data, as the area increases by an amount of about 0.11 billion acres annually until the end of the period. It also shows that the statistical significance of the parameters of the estimated model is proven. The f-index statistic indicates that the statistical significance of the estimated model as a whole is consistent, and the adjusted coefficient of determination shows that about 93% of the changes occurring in the value of crop area are due to factors explained by time, as shown in Table (4).

Development of Economic Indicators for Wheat and Corn Crops:

It is clear from Table (5) that the average value of production input costs reached about 2666.33 pounds/acre during the period 2020 to 2022. The average farm prices during the same period were 823 pounds/ ardab. The average inflation rate is 11.53%.

It is clear from Table (6) that the average value of production input costs reached about 4,330 pounds/acre during the period 2020 to 2022. The average farm prices during the same period were 883 pounds/ardab. The average inflation rate is 31.15%.

It is clear from Table (6) that the average value of production input costs reached about 4,330 pounds/acre during the period 2020 to 2022. The average farm prices during the same period were 883 pounds/ardab. The average inflation rate is 31.15%.

Table 5. Economic indicators for the wheat crop during the period from (2020-2022)

Years	value of subsidies farmers (pounds/acre)	Farm prices (pounds/ardab)	Inflation rate (%)
2020	2457	700	7.69
2021	2612	820	17.14
2022	2930	950	9.76
Average	2666	823	11.53

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Economics Bulletins, Various issues.

Table 6. Economic indicators for the corn crop during the period from (2020-2022)

Years	value of subsidies farmers (pounds/acre)	Farm prices (pounds/ardab)	Inflation rate (%)
2020	3714	650	20.37
2021	4132	800	23.07
2022	5145	1200	50.00
Average	4330	883	31.15

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Economics Bulletins, Various issues.

Recommendations:

In light of the above results, the research recommends the following:

1) Providing subsidized seeds for farmers for all crops through the Ministry of Agriculture and distributing them through agricultural associations located in the villages to eliminate seeds of unknown origin that farmers buy from the black market and plant, which leads to a decrease in the productivity of these crops, especially grain crops.

2) Developing the role of agricultural extension for farmers and activating their role in educating farmers. This is in addition to working to provide pesticides and their alternatives to combat diseases and pests that affect wheat and corn, especially rust in wheat and armyworm in corn, which may affect the productivity of these important strategic crops, as well as raising awareness about the application of modern irrigation systems with Paying attention to fertilization and irrigation processes, the quantity and periods of adding fertilization, or fertilization dates.

3) Providing pesticides approved by the Ministry of Agriculture at reasonable prices and combating some adulterated pesticides of unknown origin that are sold on the black market at high prices.

4) Fertilizers must be dispensed using the smart card to the farmers who are in charge of farming, not the owner, by ensuring through inspection campaigns on agricultural lands that the person dispensing the fertilizer is the actual person in charge of the agriculture, even if the land is being rented by the owner.

5) Facilitating farmers access to loans through easy and accessible means, and also helping the farmer to market the crop in cooperation with the agricultural associations present in the villages.

6) Directing in-kind support to small farmers, especially with the high rates of inflation and the decline in the monetary value of the pound.

7) Developing legal frameworks and policies that help determine the target groups of support and methods of providing support to them, and in particular identifying and addressing the obstacles that hinder the support from reaching the targeted people and thus not achieving the desired goals.

8) Implementing training and awareness programs and raising the level of technical support for the target groups, and for these programs to be part of the support directed to them in order to make the sustainable development goals a reality for the target groups.

9) That support be directed to farmers with lower incomes and limited resources, and that supporting them is one of the development goals of the agricultural sector so that they can be partners and beneficiaries of it.

10) When directing support, two main axes should be taken into account, the first of which represents "achieving food security (raising the level of self-sufficiency)," while the second represents "developing agricultural exports (production for export)."

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الملخص العربي

دعم مستلزمات الإنتاج الزراعي لأهم المحاصيل الاستراتيجية في مصر

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تتبع الكثير من الدول سياسات الدعم الموجه للقطاع الزراعي ويأخذ الدعم أشكالاً مختلفة ويطبق بوسائل وأساليب متعددة. ويهدف ذلك إلى تحفيز الإنتاج لتحقيق أمن غذائي مستمر والتوسع في المساحات المزروعة لتلك المحاصيل وبالتالي زيادة قيمة الإنتاج الزراعي القومي. حيث بدأت السياسة الزراعية منذ النصف الثاني من الثمانينات في تطبيق برنامج الإصلاح الاقتصادي لتطبيق الدعم على مستلزمات الإنتاج الزراعي (مثل: التقاوي، الأسمدة، المبيدات)، وذلك لدعم لمستلزمات الإنتاج الزراعي والتي تؤثر على أسعار وتكاليف أهم المحاصيل الزراعية الاستراتيجية في مصر.

وانحصرت مشكلة البحث في ارتفاع أسعار مستلزمات الإنتاج الزراعي والتي تمثل أهم المشكلات التي تواجه المزارعين في مصر، وأيضاً مشكلة الأسمدة من حيث ارتفاع أسعارها وعدم توافرها، بالإضافة إلى ارتفاع أسعار إيجار الآلات الزراعية والذي يؤدي إلي ارتفاع التكاليف الزراعية وتقليل المساحات المزروعة من المحاصيل وبصفة خاصة المحاصيل الاستراتيجية. حيث أن تمويل المحاصيل الاستراتيجية بلغ أكثر من 6 مليارات جنيه سنوياً بفائدة ميسرة 5%، إلى جانب تحمل الدولة دعم بقيمة 7% خلال السنوات الأخيرة، بما يعادل أكثر من 500 مليون جنيه سنوياً، في حين بلغ عدد المستفيدين نحو 600 ألف مزارع. وبالتالي يجب دعم المزارعين من خلال توفير مستلزمات الإنتاج من أسمدة وتقاوي ومبيدات بأسعار مخفضة وجودة عالية، في

الموسمين الشتوي والصيفي، لزيادة مساحة وإنتاجية المحاصيل.

ويهدف البحث إلي التعرف على أساليب التي تتبعها الدولة في سياسة الدعم لمستلزمات الإنتاج الزراعي للمحاصيل الزراعية الاستراتيجية المصرية، والعمل على حماية المنتجين الزراعيين من التقلبات السعرية وزيادة الإنتاج لتلك المحاصيل خلال جميع المواسم الزراعية.

وجاءت أهم نتائج البحث أنه يستلزم لتنفيذ الدعم النقدي وجود بيانات تفصيلية عن مستحقي الدعم كما يؤدي زيادة دعم بعض مستلزمات الإنتاج الزراعي وخاصة للمحاصيل الاستراتيجية إلي تشجيع المزارعين على زياده الإنتاجية وهذا يتضح في محصول القمح حيث أدي إلي زيادة الإنتاج المحلي من 9.2 مليون طن عام 2014 الى 10 مليون طن عام 2022 ويتضح ايضاً أن هناك تذبذب في قيمة الدعم الموجهة للمزارعين وهو ما يؤثر على ارتفاع تكاليف الفدان من المحاصيل الاستراتيجية وخاصة القمح وتوصل البحث أن عند قياس تطور قيمة الدعم الموجهة للمزارعين لم تعطي صورة إحصائية مناسبة وذلك نظراً لتذبذب البيانات ارتفاعاً وانخفاضاً عبر مرور الزمن، وارتفاع تكلفة مستلزمات الإنتاج الزراعي للمحاصيل الاستراتيجية مثل القمح والذرة وزيادة معدلات التضخم.

الكلمات المفتاحية: الإنتاج الزراعي، الدعم، المحاصيل الإستراتيجية، الإعانات.