

## ORIGINAL ARTICLES

### An Economic Study of the Current and Futuristic Situation of the Rice Crop in Egypt

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#### ABSTRACT

Rice is considered the most important exporting crop in Egypt. The study focuses on the current status of rice production in an attempt to find a more optimistic vision for the future on the two levels; the local and the external. This study shows the decrease of the rice planted land area, its productivity, its production, its self-sufficient rate, its surplus and exporting amount. In 2009, the results of the study are as following: 22.6%, 1.47, 24.4, 41.1, 66.8 and 48% in comparison with the production in 2008 respectively. On the consumption level, the consumer price increases to 5.5 and 6.5 pound for each kilogram in 2010, 2011 respectively. This leads to a decline in the amount of the exporting rice. This may lead to a closure in the global markets in front of the Egyptian rice. All this happen despite the highly and obviously changing advantage of the Egyptian rice, which was in between (10.5-12.3) during the three periods under study: (1995-1998), (1999-2003) and (2004-2008). Finally, it became obviously clear from this study that planting the most highly producing kinds of rice; such as, Sakha 101, 103, 104, and Giza 181 and 182, will improve the production. It may reach about 6.5 million ton with the same planted area of 2009. Also, the planting of the two hydride kinds; 1 & 2 may save from 25% to 30% of the amount of the rice needed water. Additionally, the surplus amount may count 688 & 1338 thousand ton in 2017. This may happen if the productivity of each fiddan reached to 4.5 and 5 / fiddan respectively. All this may happen along with the stability in the individual consumption on 58 kilo yearly. On the other hand, in 2017, if there is any possibility that the rationalization of consumption may reach 47 kilogram for yearly, the surplus will be 1.67 and 2.32 million ton, respectively. Thus, our external markets will be kept safely.

**Key words:** Rice Production - Self-Sufficiency of Rice - Rice Exports - Obvious Changing Merit of Rice.

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#### Introduction

Since more than fifty years, a lot of agricultural decisions and factors mingled and combined together leading to the great existing deterioration in the Egyptian Agricultural field. Among the most important of these factors was the excessive delay in the most strategically vital exporting crops; such as, cotton and onions. Not only this, but there was also a great threat that rice, one of the most important Egyptian exporting crops, may follow these declined crops. Another factor was the increase of the importing rate of other crops like wheat. A third factor was the reducing of the agricultural land area. Moreover, the agricultural land area was limited and abused either through establishing buildings or other tourist projects on it.

On the other hand, the production of these agricultural land also decreased due to many issues; some of them were the rising of its water level, especially those lands nearer to the High Dam, and its bad irrigation processes. Since agriculture was considered one of the most important economic fields that used water resources, water problems appeared clearly during these last years. All this happened, especially, because of the rejection of the Nile Basin Countries to increase Egypt's share of the Nile water. Additionally, there was a lack of the basic fundamental infrastructure that used in agriculture. This happened because the irrigation systems and its nets were ruined. Moreover, the cost of their rebuilding was highly increasing. This led to the loss of great amounts of water that used either in agriculture or in drinking.

Finally, the most important factor of the rice problem in Egypt was the absence of the right agricultural decisions that could improve the agricultural crops' production, especially the strategic decisions. These wrong decisions forced farmers to give up planting these crops, which would not give them the supposed good reward to urge them either to go on planting these crops or to increase its planted areas.

#### *Objective of the Study:*

Rice is considered the most important strategically exporting crop. This study is an attempt to identify the most important problems that the rice crop has suffered from. This study will tackle the current statuses of rice

production in an attempt to find a more optimistically futuristic vision on the two levels; the local and the external. This will happen on the background of the political changes that happened in Egypt recently. All of us hopefully wish that these changes may correct the old, wrong policies in general and the agricultural ones in particular. Also, there is a great hope that these changes will achieve progress in all of the state's fields in general and the Egyptian agricultural field in particular. Hopefully, it will guarantee welfare for Egypt since Egypt supposed be an agricultural country.

#### Method of Approach and Data Sources:

In order to achieve its goal, this study depended on using some statistical, descriptive and quantitative methods for data processing. Certain standards are used in this research; such as, the percentages rates, the arithmetic averages and some other obvious comparative advantages standards. The data of this study is gathered from statistics that published in the Public Mobilization and Statistics Center, the Central Administration of the Agricultural Economy in the Agricultural Ministry along with other published researches and studies relevant to the topic of the study.

#### Research Results:

##### 1- Economic Indicators for Rice Crop:

Rice is considered one of the most important food crops in the Egyptian economy. Moreover, it is one of the most important exporting crops. In 2007<sup>(1)</sup>, the global rice production amounted nearly 28 million / tons yearly and Egypt participated by 25% of the best exchanging kinds of rice totally.

The Egyptian rice is characterized by its short grain and its slimy texture. This is what made it the best and highest type in the whole world. The price of each ton of the Egyptian rice costs 450 dollar, while the Philippine rice is valued by 320 dollar at the same year.

Table number (1) showed the oscillation of the rice cultivated areas between increasing and decreasing during (1995-2009). In 2008, the rice cultivated area was about 1.77 million fiddan and this was its highest value. While, in 2009, was declined to its lowest valued; i.e., 1.37 million fiddan. During the period under study, the average of the cultivated area of rice was about 1.5 million fiddan. Also, it produced about 5.8 million ton with 3.9 ton/ fiddan as a productive average. As a result, the rice cultivated area achieved its self-sufficiency by 169.6%.

**Table 1:** Some Economic and Productive Indicators for Rice During (1995-2009).

Years	Population/ Million	Planted Area Thousand Fiddan	Producti- vity Ton/ Fiddan	Total Producti- on Million Ton	costs Pound/ Fiddan	Self- Sufficie- ncy Rate (%)	Net Return Pound/ Fiddan	Farm Price Pound/ Ton	Consum- ption Million Ton	Surplus Million Ton	Exports quantity Thousand ton	Exports Value Million Pound
1995	60.3	1400	3.42	4.8	1257.6	161.6	1072	655.8	2.97	1.83	156.76	56.73
1996	61.5	1405.3	3.48	4.9	1307.4	161.7	1226.9	702.2	3.03	1.87	325.76	116.19
1997	62.7	1549.9	3.54	4.5	1426.8	147.5	1210	717.9	3.05	1.45	201.31	71.27
1998	63.9	1325	3.63	4.46	1703.9	159.9	1025.8	723.8	2.785	1.68	427.73	134.39
1999	64.3	1559	3.73	5.84	1750.7	185.4	1098.8	729.9	3.151	2.69	306.86	87.55
2000	65.5	1568.9	3.82	6.00	1692.3	185.8	930.7	582.7	3.231	2.77	306.03	103.54
2001	69.9	1340.3	3.9	5.23	1685.2	164.5	709.3	592.3	3.117	2.05	650.31	132.91
2002	68.3	1547.4	3.95	6.11	1760	168.3	1608	671.5	3.631	2.48	452.45	103.35
2003	69.5	1507.6	4.10	6.17	2059	172.8	1796	992	3.574	2.68	572.27	148.02
2004	70.7	1536.6	4.13	6.35	2373	181.9	1969	1024	3.489	2.86	803.55	222.5
2005	73.7	1459.1	4.2	6.12	2455	190.1	2149	1069	3.22	2.9	1017.37	294.31
2006	75.1	1592.8	4.23	6.75	2658	192.9	3029	1078	3.486	3.26	917.24	287.26
2007	76.5	1672.7	4.11	6.87	3065	190.3	3031	1454	3.607	3.26	1123.49	397.26
2008	77.7	1769.8	4.09	7.24	3932	160.9	2260	1465	4.501	2.74	1223.6	408.35
2009	79.2	1369	4.03	5.5	3788	119.8	2458	1495	4.59	.910	636	539
Average	69.3	1506.9	3.9	5.8	2080.4	169.6	1704.9	930.2	3.43	2.36	608.05	206.84

Source: Ministry of Agriculture, Agricultural Affairs Sector, Agriculture Economy Bulletin: different issues, Central Agency for Public Mobilization and Statistics, Statistical Annual Book, different issues

Totally, the local consumption of rice was 3.4 million ton. Therefore, 2.36 million ton saved as a surplus used for exporting. During (1995-2009), the average of the value of the exporting rice became 206.8 million ton and amounted by 33% of the Egyptian agricultural exports totally. This made rice a very important source for the foreign exchange. The rice cultivated area counted 11.7% out of the total of the grains areas. In 2009 The rice cultivated area was 1369 thousand fiddans. The summery water for rice was 5852 cubic meters /fiddan, while it was 6484 cubic meters in winter.

In comparison to other summery crops, rice was considered one of the highly priced crops that achieved the greatest benefit to the farmer, so it was better for the farmer to plant rice. Also, the cancellation of the obligatory installation of crops was another reason that urged farmers to plant rice. Additionally, the agricultural prices were freely left to be determined by the market forces. All of these reasons made farmers eager to plant rice.

On the other hand, planting rice used a huge amount of water recourses and there was a limitation of water resources in Egypt. Besides, there was a decrease of the efficiency of using water resources to most of the

agricultural crops. Therefore, in 2009, the Agricultural Ministry announced its decisions concerning reducing the rice cultivated lands. Badly enough, the land area was reduced to about 1.37 million fiddans, and as a result, the amount of production decreased to 5.5 million tons. With the excessive increase of population and consumption rate, the surplus amount was decreased from 2.74 in 2008 to 0.9 million ton in 2009 as a result, the exported amount was reduced to 636 thousand ton. Unfortunately, it declined to 48%, in comparison to its degree in 2008. Therefore, in 2009, the exporting price of rice increased to 157.6% . This was more increasing than the price of rice exporting in 2008.

Thus, it became clear that, the decision of reducing the cultivated area of rice which was applied in 2009, led to a decrease in its productivity, its production, its self-sufficiency rate, the surplus amount of the rice crop and the amount of its exports by 22.6%, 1.47%, 24.03%, 25.5%, 66.8%, 48% in comparison to 2008, respectively.

While the agricultural price did not exceed 2% in 2009, in comparison to its degree in 2008, the consumer price was seriously affected. The price of rice reached to 5.5 pounds / kilo. Also, in 2011, it increased to 6.5 pounds / kilo. Thus, the increase percentage reached to 72.5%, in comparison to its degree in 2008.

On the 26<sup>th</sup> of March 2008, the Ministry of Industry and Trade tried to control the increasing of the rice price through decreasing the rice exporting. This was done through increasing the fees of rice exporting. From the 1<sup>st</sup> of April and for six months, the exporting surplus was allowed, but the ministry imposed one thousand pounds as fees for each ton of rice. This would lead to markets' closure in front of the Egyptian rice for many years. Moreover, the importing countries for the Egyptian rice may turn to other exporting countries. This means the loss of confidence in the local product of one of the most important Egyptian exporting crops in the current time.

All these reasons made the study concerning the acknowledgement of the comparative advantage of rice. The comparative expenses were considered the most necessarily and sufficient condition for trade exchange among countries. If this condition was available, it would be in the favor of the country to be specialized in producing this product because its expenses were more less than those in other countries and with a reducing advantage bigger than other commodities. This means a more comparative advantage in comparison to other countries.

This study concluded that the Egyptian rice had the ability to keep its changing advantage during the period under study. This would be clearly shown in Table no. (2). The first period, (1995-1998), witnessed the agreement of the International Trade Organization. The second period, (1999-2003), followed the European-Egyptian Agreement. The third period started from 2004 to 2008. It included the great global crises as it began with the food crisis and ended by the Global Trade Crisis.

In fact, the Egyptian rice faced a lot of difficulties during these periods, especially those objections of the European Union, leading by Italy. Just to mention one example; the European Union deprived the Egyptian rice exports of any facilities. Additionally, high customs fees were imposed on rice by 300% (<sup>1</sup>). In spite of all these difficulties, the good quality of the Egyptian rice along with its competition to the global sorts helped it to keep this comparative advantage up till now. Also, these qualities made rice valuable to gain its position among other products. The official ministries, which were especially concerning for planting rice and its external trade, put clear strategies and policies that aimed at providing the local market needs. Also, these concerning ministries determined the land areas and the aimed amounts for exporting yearly. Additionally, many inclusive plans were made for rationalizing the needed amount of water for rice planting because it was one of the crops that used big amounts of agricultural water resources.

Since the obligatory circular agricultural system was no longer applied in Egypt, a lot of studies (<sup>2</sup>) cared for the possibility of improving the efficiency of using water resources in Egypt to achieve the suggested crop instillation that could enlarge the benefits of the water unit and decreasing the water needs at the same time.

This study concluded that the return of the unit of water used in irrigation for the suggested structure was evaluated by .61 pound / cubic meter. Thus, it achieved an increase that valued by .1 pound / cubic meter. This increase valued 10.8 comparing to the current crop structure. One of the results of this suggested structure was the increasing of oil crops, but this was on the account of the rice planted area. So, the rice planted area was reduced to 1200 thousand fiddans, due to the plan of the Agricultural and Land Reclamation Ministry. Moreover, in 2009, the rice planted area was reduced to 1.4 million fiddans.

However, this study explored the many negative effects that resulted from reducing the rice planted land area. These negative effects clearly appeared in the decrease of the rice total production, its self-sufficiency, and its exports' amount. Also, during the period of applying the decision of reducing the planted areas, these bad effects clearly appeared in the rice local price increase. It also threatened the loss of the Egypt's rank as a rice exporter in the future. All of these will be clearly exposed in the study.

The apparent comparative advantage is counted through using the following formula:

$$RCAJ = (X^j_e / X^j_o) / (X^j_w / X^a_w)$$

Note:

The value of the Egyptian exporting commodity (j) to the world =  $X_e^j$

The value of the Egyptian agricultural exporting to the world =  $X_e^a$

The international exports; total value of the commodity (j) =  $X_w^j$

The international agriculturally exports' total value =  $X_w^a$

The apparent comparative advantage value is waving in-between (o) - ( $\infty$ ). The value of (RCA) is more than 1. This asserts the existence of an obviously comparative advantage. Table no. (2) shows certain results that affirm the waving of the comparative advantage of rice during the three periods from 10.5 to 12.3, i.e., it becomes more than 1.

**Table 2:** Obvious Comparative Advantage of the Egyptian Rice during the Periods (1995-1998), (1999-2003), and (2004-2008).

Period	First Period	Second Period	Third Period
Egyptian Rice Obvious Advantage	10.49	11.11	12.34

Source: Data is counted and gathered from table no (1).

This refers to the importance of this crop as a competitive one that participating in balancing the Egyptian agriculturally economic scales.

#### *Expecting the Effects of Using New Species on the Economic Indictors of the Egyptian Rice:*

There were a lot of sorts for the Egyptian rice which were distinguished by their high production that was valued by 5 ton / fiddan. Also, these sorts were characterized by its short period from planting to harvest. Some of these species: Sakha (101, 103, and 104). This was in addition to other kinds, such as, Giza (178, 181, and 182). Through planting these sorts, the production could be 6.5 million tons with the same planted area, which valued by 1.3 million fiddans. This would increase the production to one million ton in comparison to its degree in 2009. Moreover, the Agricultural Research Center provided two hybrid kinds; 1 & 2, since these sorts gave a good production; 4.8 and 4.7ton / fiddan, respectively. In addition to their great global production, these species were marked by its resistance to agricultural diseases and pests. Moreover, they had the ability to bear inappropriate environmental circumstances, specially the soil salinity. Also, these sorts marked by its early growth. Therefore, 25%-30% of their need for water was probably saved.

The following formula is about population rate in 2017:

$$A = S (1 + T)^n$$

NOTE:

(A) → the expected population.

(S) → the population in 2009.

(T) → the population growth.

(N) → number of the expected years.

From table no. (3), the expected population number will be about 89 million people, while the current population growth rate is about 1.9 million people. The individual's consumption is supposed to remain static to its previous level in 2009; i.e. 58 kilogram of rice for each individual. The production of these kinds amount to (4.5-5 ton/fiddan). Through planting those kinds, the surplus will be about 688 thousand tons in 2017. This will be directly used for exporting. However, this will only happen if the production reached 4.5 ton/ fiddan. Also, it will be 1.338 million if the production amounts 5 ton/ fiddan. So, this means that the rice crop will safely cover the local consumption. Additionally, the surplus will be exported. Not only this, but these sorts are also marked by its ability to save water.

In case the individual share of rice is reduced to 47 Kg, as it has been in 2007, the surplus will be 1.67 million ton for the first case, and 2.32 million ton for the second one. Therefore, Egypt will surely keep its position among the exporting countries.

**Table 3:** Expected Economic Indicators for Egyptian Rice Species for the two years 2017 and 2030.

Year	Space Thousand /fiddan	Productivity Ton/fiddan	Production Million Ton	Population/ Million inhabitants	Consumption/ Million Ton	Surplus /Thousand Ton
2017	1.3	4.5	5.85	89	5.162	688
2030	1.3	5	6.5	89	5.162	1338

Source: The Public Mobilization and Statistics Center.

#### **References**

Abd Alhadi Mahmoud Hamza and others, 2010. The Suggested and Current Crop Structure for the Most Important Crops Used for Raising the Efficiency of the Used Irrigation Water in the Egyptian Agriculture. The Egyptian Magazine for Agricultural Economy: volume 20, 1<sup>st</sup> edition, March.

Dr. Sorya Fared Sadeq, 2010. An Economic Study of the Current Situation of the Rice Crop in Egypt. Ph. D. Egyptian Magazine for Agricultural Economy: volume 20, 1<sup>st</sup> edition, March.

Egyptian Documents: the Trade Minister Decision no. 718 / 2007. It forced exporting fees by 200 pounds / ton, on all kinds of rice that are subjected to customs terms, edition (214).

The Agricultural and Land Reclamation Ministry. Economic Issues Section, Balanced Nutrition Magazine, different editions

The Public Mobilization and Statistics Center: The Annual Statistical Book, Selected Editions.