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**AGRICULTURAL DEVELOPMENT SYSTEMS  
EGYPT PROJECT**

**UNIVERSITY OF CALIFORNIA, DAVIS**

SOME REMARKS ON THE INSTITUTIONAL FRAMEWORK  
OF THE RICE INDUSTRY IN EGYPT

by

Saad Nassar, University of Cairo  
— M. Ragaa El-Amir & Ahmed A. Hafez Mohamed  
University of Assuit

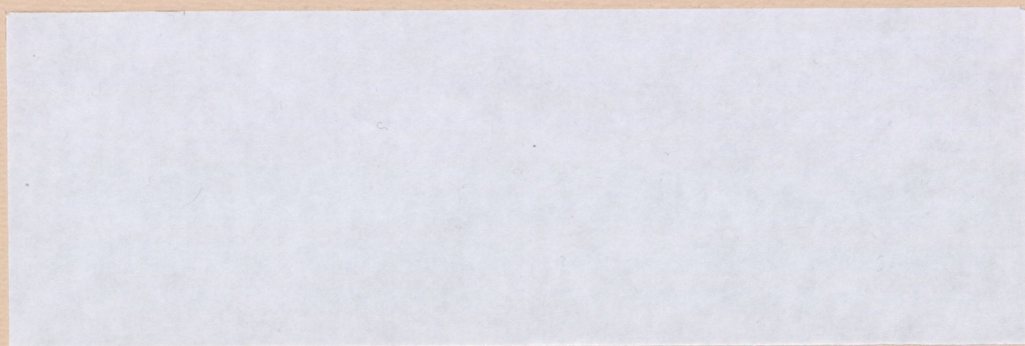
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SOME REMARKS ON THE INSTITUTIONAL FRAMEWORK  
OF THE RICE INDUSTRY IN EGYPT

by

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November, 1981

Introduction

Egyptian agriculture is old to the extent that the sociopolitical economic structure is deeply rooted in history and many of the observed current phenomena could be explained by carefully studying historical developments taking economic, social, technical, and political aspects into consideration. Also, Egyptian agriculture has both the primitive and the modern aspects of the agricultural industry; i.e., while the industry is still primitive in some aspects, it has adopted many features of modern and advanced techniques. Moreover, Egyptian agriculture is characterized by one of the most intensive cropping patterns of the world and, in general, yields are high compared with world standards. Recently, the institutional framework in agriculture has gone through two distinct phases, i.e., before and after the 1952 revolution. While the Ministry of Agriculture is playing roles in regulatory work, research, and extension work in both phases, there is a different role played by farmers and private organizations. Before 1952, much research, as well as extension in agriculture, was undertaken by private organizations (for example, the Egyptian Agricultural Organization) and by farmers (working under a different socioeconomic atmosphere). After 1952 and the subsequent Land Reform Act, significant changes took place to cope with the new developments. The role of governmental institutions with regard to research and agricultural extension has been increasing significantly. //

### The Rice Industry in Egypt

Rice is the only staple grain food in surplus now in Egypt. So far, \* Egyptian rice production is based on the Japinca type of rice—short grain, nonsticky when cooked, and translucent. Because of its special requirements of irrigation regimes, rice is cultivated mainly in the northern half of the † Delta area where a special irrigation regime is guaranteed. This area includes large areas with various levels of salinity and at various stages of reclamation. Rice is tolerant in salty land and is used in this area to help leach and lower salinity. Four governorates account for the major area cultivated—Dakahliya, Kafr El-Sheikh, Beheira, and Sharkiya. Rice is also grown in Gharbia, Damietta, and, to a lesser extent, in the Fayoum governorates. Rice is mainly produced as a summer crop immediately following winter crops in the cropping rotation. In order to save land and water and to have better weed control, transplanting is the main method of planting. Nurseries are usually planted in late April and May and plants transplanted to the fields a month later (June). One feddan of nursery supplies 6-8 feddans of rice. The mature crop is harvested in September.

Two rotations are common for rice. The first is the three-year rotation in which the area is divided into three more or less equal blocks (Figure 1). The second rotation is the two-year rotation in which the area is divided into two equal blocks (Figure 2). The first block is planted in winter to temporary berseem followed by cotton as the summer crop. The second block is divided into two parts—one for clover (or other legumes) and the other for wheat (or barley)—both to be followed by rice (or maize or sorghum) as summer crops. This sequence is rotated in the two blocks in the second year and so

<u>Month</u>	Land Parcel #1	Land Parcel #2	Land Parcel #3
October	Berseem	Wheat	Wheat
November			
December			
January			
February			
March	Cotton	Rice	Rice
April			
May			
June			
July			
August			
September			

Figure 1.  
Typical Three-Year Rice Rotation

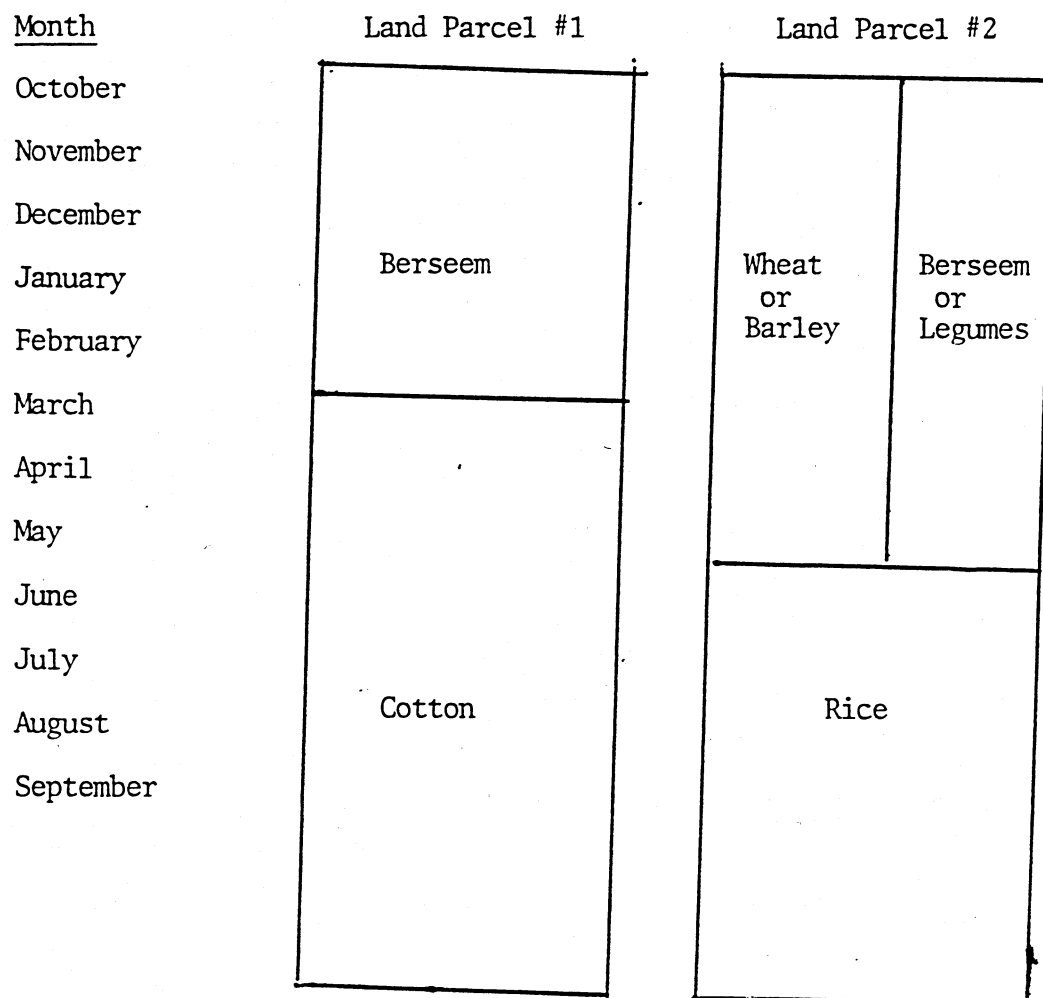


Figure 2.

Typical Two-Year Rice Rotation



on. In the rice belt, rice usually is the summer crop following wheat (or barley and legumes). In the southern Delta areas, maize is the main summer crop following winter cereals and legumes.

In view of these rotations, it could be said that, technically, there is an upper limit to the rice area. This limit is half of the cultivable area in the rice region in the northern Delta where the two-year rotation is followed and one-third of the cultivable area in the rest of the Delta where the three-year rotation is followed. Also, from the technical point of view, rice competes directly with other summer crops--such as maize, millet, and cotton--produced in the Delta in the same season. ✖✖

#### Irrigation

Egyptian agriculture is completely irrigated, and an extensive system of public water delivery canals has been established throughout the country bringing water to every village. This is linked with private irrigation canals reaching all fields. So far, there are no direct charges for water used for irrigation. However, water is quickly becoming a scarce resource, and it is expected that farmers will have to be charged for water use. It is estimated that the water requirements for rice amounts, on the average, to about 10,000 M<sup>3</sup> per feddan. Because of the important role and the relatively large amounts of irrigation water required in rice production, it is expected that this situation (increased water costs) will affect the economics of production of rice. ✖

The amount of water for irrigation is controlled by the availability of water in the canals as a result of following a system of "irrigation rotations" which allows the systematic alternations of "wet" and "dry"<sup>1</sup>

periods in the canals by fixing the total flow into the canals (based on the area served and official irrigation requirements for each region and for each cropping season) and by controlling the size of the field outlet allowed to each farmer according to the area of his property.

From the water stored upstream in the Aswan High Dam, certain discharges are released daily by the Ministry of Irrigation in accordance with the agricultural water requirements. Proportional fixed shares are released from the several distributing barrages constructed along the Nile to the main irrigation canals which emigrate directly from the Nile. From there, an extensive irrigation network of distribution canals brings water to all cultivable land.

Each year, and before the cultivation season, the Ministry of Irrigation issues "irrigation licenses" authorizing the irrigation of a certain area of rice in each region according to the annual water supply available. Before the construction of the High Dam, there had been a wide pattern of annual water-supply fluctuations. Therefore, the annual area of rice, depending on the volume of annual water supply of the Nile waters reaching Egypt during the summer, formerly fluctuate from 300,000 to 700,000 feddans. After the High Dam and the possibility of perennial storage capacity, a minimum annual rice area of about 700,000 feddans was guaranteed. According to the results of some previous studies, the available water for irrigation affects both the area of rice as well as the yield per feddan. \*

After 1952, the annual area to be planted by rice is decided upon according to the needs of the country during and prior to the beginning of the cropping year. This is done for rice as well as other crops in total cultivable area. Operationally, this is worked out through a Committee composed of

representatives of various ministries and bodies; among them are the Ministry of Agriculture (for the technical aspects of agriculture, seed production, yield estimates, and the undertaking of the executive role of the agreed-upon decisions), the Ministry of Supply and Internal Trade (estimation of local consumption requirements and milling capacities), the Ministry of Planning (representing the National plans in action and possible modifications and their implications on the overall plan), the Ministry of Foreign Trade (representing the export goals and potential markets for Egyptian rice abroad), and the Ministry of Irrigation (for water supply availabilities).

After deciding upon the total area of rice to be planted on a national level, it will be distributed among various rice-producing governorates, districts, and villages. Before the beginning of the cropping year, each village knows where the rice is to be grown. ✖

### Fertilizers

On the basis of a wide research program covering the whole rice-producing area and on the basis of specific recommendations for fertilizer rates for rice in each locality (governorates and districts), each farmer is guaranteed to receive the appropriate amount on credit. He may also get, in cash if he so desires, an additional 100-150 kilograms of N-fertilizer per feddan. It is estimated that fertilizer costs L.E. 11.49 per feddan, or about 7 percent of total costs per feddan of rice. Rice is fertilized, on the average, by 200 kilograms per feddan of N-fertilizer and 75 kilograms per feddan of P-fertilizer. ✖

The Agricultural Development and Credit Bank branches in the governorates are responsible for supplying the agricultural cooperatives (on the village level) with the fertilizers needed. There is a unified supported price for



each type of fertilizer all over the country irrespective of the village location and the source of the product (domestic vs. foreign). \*

### Labor Input

Rice is a labor-intensive crop. Labor represents about 36 percent of the total cost of production of rice in 1977-78 (about L.E. 34 per feddan). Labor wages are increasing over time for several reasons. The situation is aggravated by the fact that there are many problems associated with the development of technically and economically reasonable machinery to be used in rice production.

By the time labor is needed for transplanting in May, there will be demand for labor for wheat harvesting. Again, by the time labor is needed for the harvesting of rice in August and September, there will be a demand for labor for cotton picking. These competitive demands help increase the wage rates.

### Seeds

Active breeding programs seem to be quite successful in producing an almost continuous supply of high-yielding varieties. The seed policy is to produce and distribute each year one-third of the rice area. It is estimated that yields have increased on the average from 1.5 metric tons per feddans to about 2.5 metric tons within two decades.

### Credit Facilities

Both in kind and in cash, credits are available to rice farmers. The general organization for Agricultural Development and Cooperatives Credit has a branch in each governorate and is responsible for the general credit policy. A farmer can get fertilizer in kind and advance money for harvest. \*  
In the 1969-70 season, rice farmers received about L.E. 8,694 million in loans.

On the average, fertilizer loans represent about 50 percent of total loans, \* while certified seeds represent about 20 percent and cash loans represent about 30 percent. The loans are paid back either in cash or by deductions from the proceeds of the cooperatively marketed crop. \*

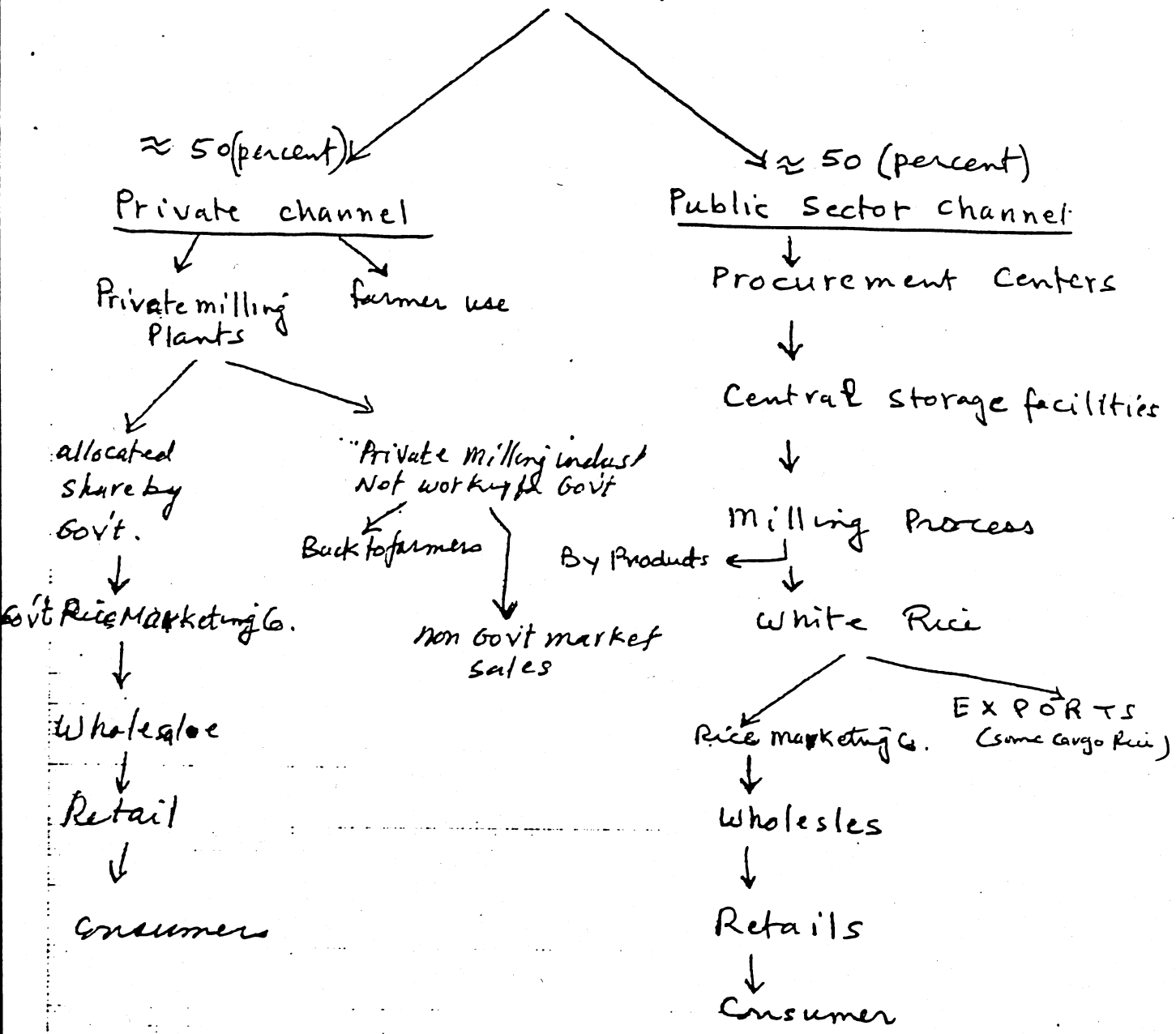
### Marketing of Paddy Rice

After harvesting, each farmer is supposed to deliver 1.5 dariba (dariba = 945 kilograms) to the Cooperative Marketing System. Exemptions could be made only if the farmer proved that he failed to attain normal yields. The procedures to make such proof are quite complicated.<sup>2</sup>

Procurement is affected through cooperative collecting centers established at the village level. The procurement centers are spread in the producing areas, and there will be a designated collecting center for each farmer to deliver his rice. The quality and quantity of the paddy are assessed by inspectors of the Ministry of Economy in association with officials of the Ministry of Agriculture and the Agricultural Credit and Development Bank. After procurement, the responsibility of the paddy lies with the rice milling companies—each operating in its own designated region until the milled rice is passed to the rice marketing company and the by-products are passed to oil extraction and feed manufacturing plants.

Figure 3 shows the rice marketing channels in Egypt. As indicated in this chart, 50 percent of paddy rice is received by public sector milling companies. \* There are eight public rice milling companies scattered in the Delta region in the rice-producing regions. These companies comprise 55 rice mills capable of milling 1.6 million tons of paddy rice annually. The rest of the paddy is either kept for autoconsumption by farmers or delivered to private \* rice mills.

Rice Marketing Channels in EGYPT  
(Annual Production)



( Fig. 3 )



Public milling companies supply the local market with white rice sold at the government-subsidized prices, and these companies are the only source of white rice exports from Egypt. The private milling industry is sometimes officially allocated certain quotas of paddy rice to be milled and delivered to the governmental distributors to be sold in the local market at the official prices. In many cases, however, the private sector millers compete with the government to get enough paddy rice to be processed by them and sold in the free market. Depending on the demand for white rice in the local market and on the official farm gate price levels for paddy rice, they offer competitive prices to rice farmers and some of the time advanced payments. No data are available on the prices offered by this sector to rice farmers in different locations.<sup>3</sup>

#### Farm Gate Prices

Data in Table 1 indicate that farm gate prices for paddy have increased from about L.E. 21 per ton in 1964 to about L.E. 50 per ton in 1976 and to L.E. 80 per ton in 1980. These prices are determined in such a way as to achieve the goals of the government. For example, when the rice milling industry was nationalized, farm gate prices were raised to compete with the private millers who had dealt with farmers. The prevailing price by that time (1964) was L.E. 14 per ton; the government raised it to L.E. 21 per ton. When the goal was to increase rice exports from Egypt, farmers were encouraged to produce more through increasing the farm prices to L.E. 26 per ton then to L.E. 30 per ton (1966-67). By the end of the 1960s when the world rice prices decreased (1970-71) and the world market outlooks were not bright, the goal was to decrease rice exports and to reduce rice production in Egypt by

TABLE 1

Prices at Farm Gate, Wholesale, Retail, and Exports, Egypt, 1965-1981

Year	Prices			
	Farm gate	Wholesale	Retail	Exports
L.E. per ton				
1965	21.3	34	40	a/
1966	26.8	49	80	61.8
1967	30.1		80	82.0
1968	31.6		80	107.8
1969	31.0	50	50	105.5
1970	28.4	50	50	55.3
1971	27.5	49	50	51.8
1972	26.6	48	50	50.4
1973	28.1	48	50	89.3
1974	36.0	46	50	291.7
1975	40.2	47	50	240.7
1976	50.0	46	50	148.4
1977	56.0		50	105.7
1978	66.1		50	120.5
1979	65.1		50	232.6
1980	81.3		50	

a/Blanks indicate no data available.

decreasing farm prices to L.E. 27 per ton (1970) and then to L.E. 26.8 per ton (1972). When international prices started to move upward again in 1973, farm prices were increased to L.E. 40 per ton in 1975.

Lately the goal has been to increase rice production mainly for local consumption and not for exports. Farm prices were increased to encourage more domestic production and to maximize the share of the paddy rice received by the public sector and, consequently, to maximize the distribution of white rice at the official prices in the local market.<sup>4</sup>

#### Marketing of White Rice

After the paddy has been milled in the public sector mills or designated private mills, it is channeled to the rice marketing company—a public sector agency for distribution of white rice locally and abroad. Currently, there are two main grades of milled rice sold in the local market—the "normal" rice, which represents the bulk of local consumption, and the "premium" grade which is less important in terms of the volume of consumption. The former grade is rationed at one kilogram per capita per month at a consumer price of 50 milliemes per kilogram (or 5 piasters per kilogram). For each kilogram, the government is paying 100 milliemes (or 10 piasters) as subsidy, i.e., double what the consumer pays. The premium or the latter grade is sold to the consumer at 140 milliemes per kilogram (or 14 piasters per kilogram). The subsidy in this case is 40 milliemes per kilogram (or 4 piasters per kilogram).

#### Consumption Policy

The discussion of a local consumption policy for rice is related to the discussion about goals for exports. There have been two goals stated explicitly by officials—one is the maximization of the hard currency from



exports of rice and the other is the attainment of the highest degree of self-sufficiency in food grains. These two goals seem to be inconsistent. The role assumed by each one of these goals changes from one period to another. By inspecting the fixed consumer prices of rice from 1965 to 1981 (Table 1), it is apparent that it started at L.E. 40 per ton in 1965 and then was doubled in 1966 to L.E. 80 per ton. This was done to increase rice exports. Actual results indicate that local rice consumption has decreased from 742,000 tons in 1966 to about 660,000 tons in 1967. At the same time, rice exports have increased from 330,000 tons to about 347,000 tons. The dominant role here is assumed by the goal of increasing exports to maximize foreign exchanges. Later, and starting from 1969, prices for consumers were reduced to L.E. 50 per ton and have not been changed since in spite of the inflationary trends and the increased levels of almost all other alternative commodities. This policy favors the increasing of local consumption at the expense of exports. Total annual consumption in the local market increased from about 800,000 metric tons in the 1960s to more than 1 million metric tons in the late 1970s. Here the role assumed by the goal of maximum self-sufficiency in food is dominant. In fact, the current plans are to export the residual after the satisfaction of local consumption of rice. Annual per capita consumption of rice in the local market has increased from 19 kilograms to 39 kilograms within one decade.

### Rice Exports

According to many indicators, Egypt is characterized by a comparative advantage in exporting rice to the international market. There is a world demand for the type of rice produced (short grain and nonsticky rice when

cooked). After World War II, Egyptian rice exports have increased significantly both to western markets (primarily West Germany and the United Kingdom), to eastern markets (primarily the USSR and East Germany), and to Japan and the far eastern countries. The volume of annual exports has varied to a great extent, especially before the Aswan High Dam, due to instability of annual water supply. However, the general trend was upward. International prices have also played a role in the size of annual exports. In the last few years, the export targets have been reduced in accordance with the objective of self-sufficiency of basic food items in the local market.

Roughly, the rice sold in the local market for 5 piaster per kilogram (L.E. 50 per ton) for normal grade while the same rice could be sold for about 40 piasters in foreign markets.

As for international market prices for rice, Egypt faces two types of markets with regard to the mechanism of price determination. The first is the international free market characteristic of Western European countries. In this case, prices are determined under competitive conditions. The second market is the bilateral trade agreement countries including all other countries such as the USSR and Eastern European countries. In this case, prices depend on the bargaining power of dealing parties.

APPENDIX TABLE 1

Average Size of Area, Yield, Production, and Exports of Rice,  
Egypt, Selected Periods, 1940-1945 to 1956-1960 and Selected Years

Years	Area	Yield	Production	Exports
	1,000 hectares	tons per hectare	1,000 metric tons	
1940-1945	243	3.00	736	240
1946-1950	297	3.70	1,111	109
1951-1955	218	3.80	830	203
1956-1960	275	5.04	1,385	232
1961-1971	340	3.46	1,175	369
1972-1977	504	4.60	2,318	181
1978-1979	515	4.88	2,511	95

Source: Ministry of Agriculture.



APPENDIX TABLE 2

Cost of Paddy Production Per Feddan, 1977 and 1978

Cost of production	1977	1978
Labor	33.850	34.70
Animal power	7.840	8.730
Machinery	13.15	15.42
Seeds	5.06	6.77
Organic fertilizer	5.11	6.33
Chemical fertilizer	6.38	7.51
Sundries	2.90	2.27
Rent	17.9	20.1
Total cost	91.38	101.83

APPENDIX TABLE 3

Annual Consumption of Rice (White),  
1951-52 and 1968-69 to 1977-78

Year	Annual consumption 1,000 metric tons
1951-52	370
1968-69	895
1969-70	1,006
1970-71	1,111
1971-72	1,137
1972-73	1,329
1973-74	1,334
1974-75	1,336
1975-76	1,340
1976-77	1,352
1977-78	1,319

Source: Ministry of Agriculture.

Footnotes

<sup>1</sup>This means four days wet and four days dry in the rice belt and seven days wet and seven days dry in the rest of the Delta.

<sup>2</sup>A farmer can deliver more than the 1.5 ton with some premiums.

<sup>3</sup>Before the nationalization of the rice milling industry, the private millers had set prices and made advance payments to farmers. These prices were similar among millers but also reflected the demand for white rice both in the local and international markets.

<sup>4</sup>By that policy, the public sector milling industry was intended to compete with the private sector millers who increased their offered prices in response to increased demand for white rice.



