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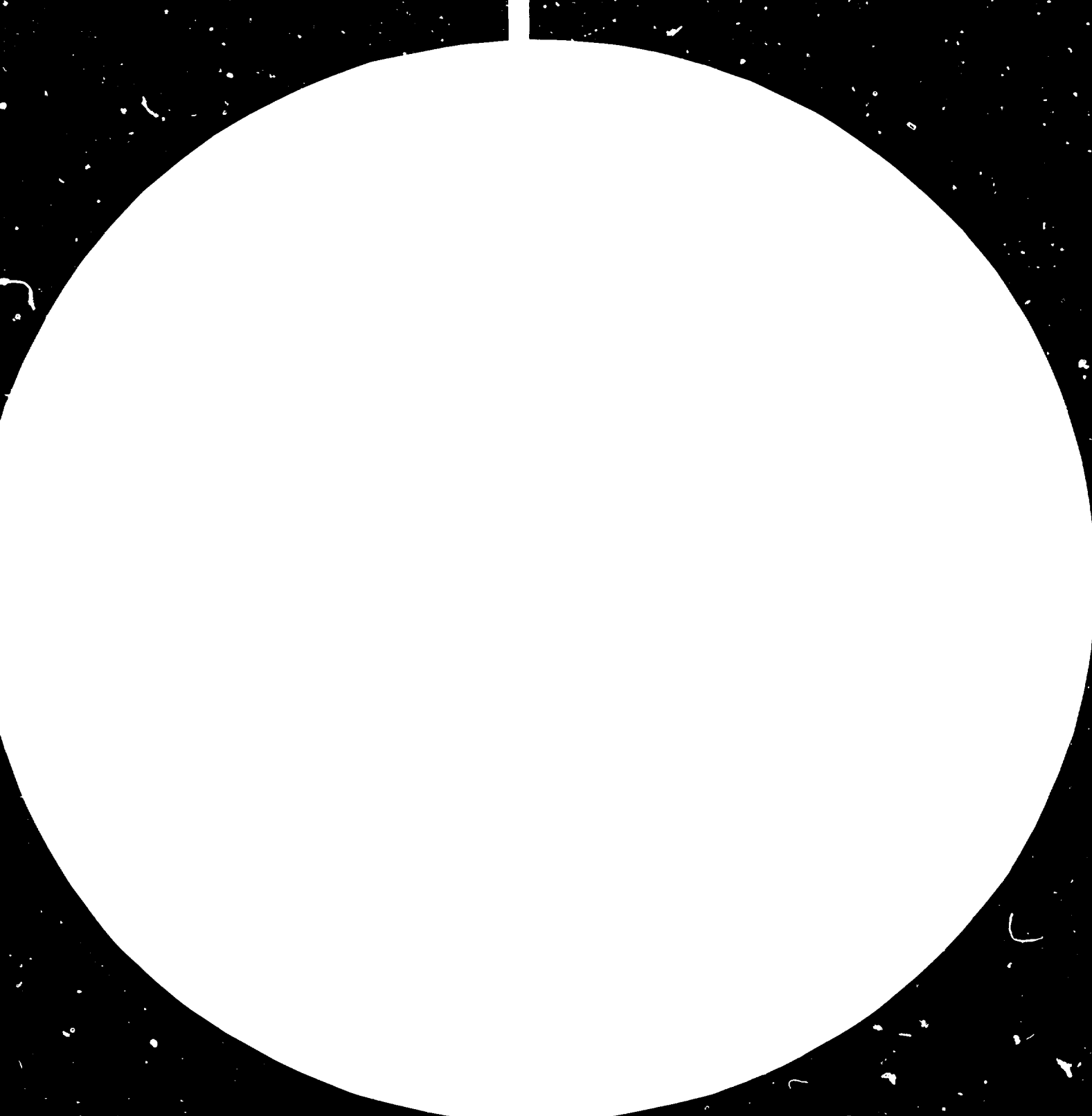
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DEVELOPMENT OF AGRICULTURAL MECHANIZATION IN IRAQ

presented by the

Government of Iraq

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## PREFACE

This document, Development of Agricultural Mechanization in Iraq is one of 18 studies presented as supporting material to the Iraq country paper about the development of agro-industries and state of agricultural production and supplementary industries. We thought of presenting them to assist the reader in getting acquainted with the pioneering experiment in Iraq in the development of this field of our economic activities. This documentation reflects the great development achieved within the years that have already elapsed since the uprising of 17th July Revolution under the leadership of Arab Baath Socialist Party that aimed at achieving economic and social welfare for the people by rational use of the natural resources and elevating our country to the rank of advanced countries within a considerable period.

From the point of view of the Revolution leadership in Iraq, what has been achieved so far in the field of irrigation development, drainage, mechanization of agriculture, animal production, other agro-industries, and other infra-structural development in this field, are deliberate and effective steps towards reaching our aspiration.

In those studies we have tried to highlight the main development features, the negative sides as well as the positive results achieved so far with the objective of presenting our experience to brotherly and friendly countries in particular to those whose conditions and potentialities are similar to our country. This exchange of experience is not only a necessity but a duty imposed on us by our principles and the current international circumstance in which food weapon becomes one of the important weapons raised by imperialism in the face of developing countries. If those countries do not support each other and exchange national experience their task in achieving their food security will be, if not impossible, difficult to achieve.

We hope that our contribution together with that of other participating states and organizations will contribute to the success of this ministerial meeting on development of food industries in developing countries.

Preparatory Committee  
for the Round-Table Ministerial Meeting  
on Agro-Industry Development

## DEVELOPMENT OF AGRICULTURAL MECHANIZATION IN IRAQ

### Introduction

The agricultural development during the period 1958-1978 especially after the 17th July 1968 revolution indicates the progress made in various fields such as, the expansions of irrigation projects, desalination, reclamation, fertilization and the introduction of improved seeds as well as other aspects of technical progress in the agricultural sector.

This progress has been achieved at high rates and clear characteristics are due to five major factors:

- 1 - The national progressive socio-economic policy and the revolutionary changes of the production relations and the development of the productive manpower, in order to secure food supply for the country as well as to cover an important part of food demand in the Arab countries in the future.
- 2 - Large-scale production in State farms, collective and co-operative farms instead of small private farms.
- 3 - The wide range of the economic development process in the country and the accompanying development in the fields of industry, oil, commerce and services, led to absorb the rural manpower surplus and necessitated the utilization of modern technology in agriculture to substitute this loss of manpower.
- 4 - The increase of demand in food is a result of population growth at a rate of 100% during the period 1958-1978. Another fact is the increase in personal income which was due to the successful nationalization of the oil companies. The nationalization had led to increase the national returns of the country.

5 - The growth of industries based on agricultural raw materials especially textile, food and fodder industries needs increasing supply of raw materials.

The most important aspect of the technical based development in the rural regions is the increased mechanization on one hand and the development of mechanic harvesting on the other. This will be dealt with in detail later.

#### Development of Technical Base

Until 1948, animal force was dominating in agricultural activities, which amounted to 97% of the force utilized (Table 1). This rate was reduced to 90% in 1958, 68% in 1968. Actually, the agricultural activities operating mechanically amount to 69%. As for the manual activities or animal force, they amount to only 31% and are concentrated in the mountainous regions where the use of machines are not feasible because of the smallness and rocky soils especially transportation and grain threshing (barley, wheat, rice), beans, lentil, chick-peas, indeen-peas. The following table shows these trends:

Table (1)  
Development of Mechanization in Iraq

Year Executed	Agricultural Activities %		Notes
	Mechanical Force	Animal Force	
1948	3%	97%	animals are used actually
1958	10%	90%	in some activities in the
1968	42%	68%	mountainous regions and
1978	69%	31%	small surfaces and transportation.

This has affected the number of tractors used as shown in Table 2. The number of tractors in 1948 was about (677), in 1958 it reached (2404), then it increased to (9763) in 1968, and to (22100) tractors in 1978. In the year 1980, it reached (33940). The increase rate is 300-400% during each decade.

Table (2)

Year	Socialist Sector		Private Sector	Total
	State	Cooperative		
1948	-	-	677	677
1958	129	-	2375	2404
1968	1552	-	8211	9763
1978	5078	899	16125	22100
1980	5740	570	18630	33940

Table 2 shows the importance of socialist sector in the field of agricultural mechanization in comparison to the private sector. The socialist sector did not have more than 16% of the total number of tractors in Iraq in 1968, then up to 30% in 1980, but, if we take into consideration that the socialist sector uses high force tractors, and the private sector uses medium force tractors (65-75 h. generally), then we will find that this percentage rose to 42% instead of 30% which is based on the number only.

It should be noted that the tractors used in the country were of various marks: in 1968, 64 marks were in use. This variety had declined and became 32 marks in 1978. The high Agricultural Board decided to decrease this divergence to 16 marks including Antar Tractors locally manufactured.



The utilization of tractors has further been increased in the annual working hours until it reached 1200 hours per annum from about 550 hours per annum in 1968. A number of other uses had been added such as smoothening, digging, straightening, seeding, transporting from simply being used as ploughers.

Development of the Mechanical Harvesting Force

The importance of mechanical force development is quite obvious in harvesting. Iraq is considered the first among the developing countries which is keen in harvesting process and implementing it in the right period. Table 3 shows the development in this field. Harvesters used in 1958 did not exceed (377), however, it increased to (2352) in 1968 and to (3599) in 1978. Mechanical harvesting force has also increased accordingly from (0.5) million donoum in 1958 to more than (4) million donoum in 1968, (6) million donoum in 1978, and up to 6.8 million donoum in 1980.

Table (3)

Development of Mechanical Harvesting Force

Year	Harvestors Participating Social Sector	Private Sector	Total	Mechanical Harvesting Force/Mil- lion donoum	Rate %	Notes
1958	33	304	337	0.5	11%	1968 is con- sidered the base year - for comparison
1968	281	2069	2352	4.4	100%	
1978	2279	1250	3529	6.5	147%	
1980	2350	1430	3780	6.8		

Table 3 shows the rapid growth achieved by the socialist sector in the field of mechanical harvesting force. In the beginning, the rate did not exceed 12% of the total number of harvesters which is more than 65%.

### Soil Preparing Machines

Archeologies proved that Mesopotamia was the cradle of agriculture and civilization and these researches also proved the high efficiency of the Sumerians in combining preparation of soil with sowing processes, which has become an interesting point for actual research.

Preparing soil for cultivation is the most important operation in agricultural program. Many tools are used and could be divided into three groups:

#### 1 - Ploughing

Preparing soil for cultivation needs many successive operations, the most important of which is ploughing. Many sorts of tools are used in this operation according to soil character, cultivated crop and natural conditions. Table 4 shows the different types of ploughs and their utilization in Iraq.

Table (4)

Plough Types and their Utilization

Plough Type	Number	Utilization
Flough	12862	In irrigated land for industrial crops
Disk Plough	4965	In hard soil and plains-rain irrigated
Digging Plough	3150	In rain irrigated exposed to erosion
Rotary Plough	300	In orchards
<b>TOTAL</b>	<b>21277</b>	Most ploughs are produced in Iskandariah (local production)

This volume of ploughs help in 75% of the work in preparing the soil mechanically instead of the hard work farmers are obliged to do.

2. Cultivators, Disc Harrows, Rollers, Scrapers

These are used after ploughing to harrowing or fining or leveling the soil. Table 5 shows their types, numbers and utilization in the country. These machines are used also in weed control and leveling soil.

Table (5)

Type	Number	Utilization
Cultivators	7684	Harrowing the soil before sowing
Discs	3632	Fining soil after ploughing
Rollers	350	Fining, leveling and rolling before sowing
Scrapers	420	Leveling soil after fining
TOTAL	12086	Most cultivators, discs are manufactured in Iskandariah

3. Furrowers, Canalizers and Shoulder Diggers

These are used to dig furrows, shoulders and temporary irrigation canals. Table 6 shows their types, numbers and utilization.

Table (6)

Type	Number	Utilization
Furrows	4561	To make furrows for furrow crops
Canalizers	4369	To dig temporary irrigation canals
Shoulder Diggers	757	To make shoulder
TOTAL	9687	Most of these machines are manufactured in Iskandariah

4. Sowing and Planting Machines

Sowing and planting are among the most important operations following the preparation of seed beds, but inspite of the wide utilization of sowers in the whole world, their utilization and numbers are still limited in Iraq. Great efforts are being carried on to generalize manufacturing and utilizing sowers under the emblem "Mechanical Sowing is an Urgent Need in Iraqi Agriculture". Table 7 shows types, numbers and utilization of sowers.

Table (7)

Type	Number	Utilization
Grain Sowers	586	For wheat, barley and rice sowing
Beet Sowers	39	For sweet beet sowing
Corn Sowers	48	For corn sowing
Cotton Sowers	79	For cotton sowing
Potato Sowers	16	For potato sowing
TOTAL	768	Some of the sowers are manufactured in Iskandariah

These are used in mechanical sowing in more than 15% of the total cultivated surfaces, which were sowed manually until 1968.

5. Before Harvest Machines

These are used after ploughing and sowing, but inspite of their importance in achieving high agricultural production, their utilization is still limited in the country. Table 8 shows their types, numbers and utilization.

Table (8)

Type	Number	Utilization
Fertilizer cultivators	148	To cultivate and fertilize between furrows
Chemical fertilizer sprinkler	54	For spreading chemical fertilizers
Manure sprinkler	20	For manure spreading
Mechanical sprinkler	709	For pest control, sprinkling pesticide
<b>TOTAL</b>	<b>911</b>	<b>Manual sprinklers are excluded</b>

Before 1968, when these machines were not used, these operations were achieved manually.

#### 6. Transport and Loading Machines

Transport and loading constitute high proportion of the efforts in agricultural operations. Big trucks are mostly utilized inspite of their high cost. In this connection, it is worthwhile to mention that agricultural trailers are much cheaper which is of vital importance keeping in mind the volume of agricultural transportaion which rose to more than 2 million tons per annum.

Iskandariah factories produce agricultural trailers of 4 tons, which can run on roads with a speed of 20 km per hour. It is very appropriate to field work and reaches the depth of the rural regions. Moreover, its low price give it the advantage in agricultural transportation. This has helped in spreading the locally manufactured agricultural trailer, which has reached an annual production of 3000 trailers to satisfy the growing demand.

The Five-Year Plan for  
Agricultural Mechanization

The five-year plan for agricultural mechanization is one of the most important achievements of agricultural planning in Iraq. The plan has defined the development scope for agricultural mechanization during the planned period in the light of the above.

Its main objectives are the following:

- 1 - To increase the level of agricultural mechanization for the major crops as follows:

Table (9)

Agricultural Mechanization Rate in 1980			
Major Crops	Total Surface Cultivated/ donoum	Surface Rate	Agri-Mechanization Rate %
Grains	12751000	78%	80%
Industrial Crops	500000	3%	60%
Fodder Crops	300000	2%	50%
Vegetables	1700000	11%	40%
	1000000	6%	20%
TOTAL	16251000	100%	63%

Table 9 shows the great importance of grains and vegetables because they constitute the major nutrition of the population. An increase in the production is expected by the implementation of the five year plan at the end of 1980.

- 2 - Activating local industry of agricultural machines to supply 80% of the agricultural demand. The Iskandariyah factories have reached the level of producing more than (4000) tractors, (10000) other agricultural machines annually.

- 3 - The plan defines the monetary and human resources needed as well as buildings, machines and the measures allocating them during the plan years to lay the material base for transition towards the full mechanization of the major crops. These means are being implemented.
- 4 - The plan aims at activating research and development in the field of agricultural mechanization. A center has been established in Sowairah for research and manpower training. As for the development of agricultural machinery, an engineering institute has been established.
- 5 - To coordinate import, the government has established a State Organization to import and distribute agricultural machinery, aiming at defining the types needed and to provide after sale services.
- 6 - To develop management systems of mechanization by spreading the technological map and to implement planned systems in agricultural activities and the auxiliary activities such as agricultural concentration, pilot plants and full mechanization of rice, wheat, potato and cotton cultivation.
- 7 - Supporting agricultural mechanization by paying 50% of the lending cost by the Government for machinery lent to cooperatives, as well as supporting selling activities at a rate of 30% to help spreading mechanization in the productive sectors.

The Ministry of Agriculture and Agrarian Reform gives special attention to prepare the five year plan of mechanization for the period 1980/1985 which aims at elevating the rate of machinery utilization in every field as well as providing the necessary manpower by establishing the college of mechanic agriculture and to promote the dissemination of information along with research and development in this field.



