



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

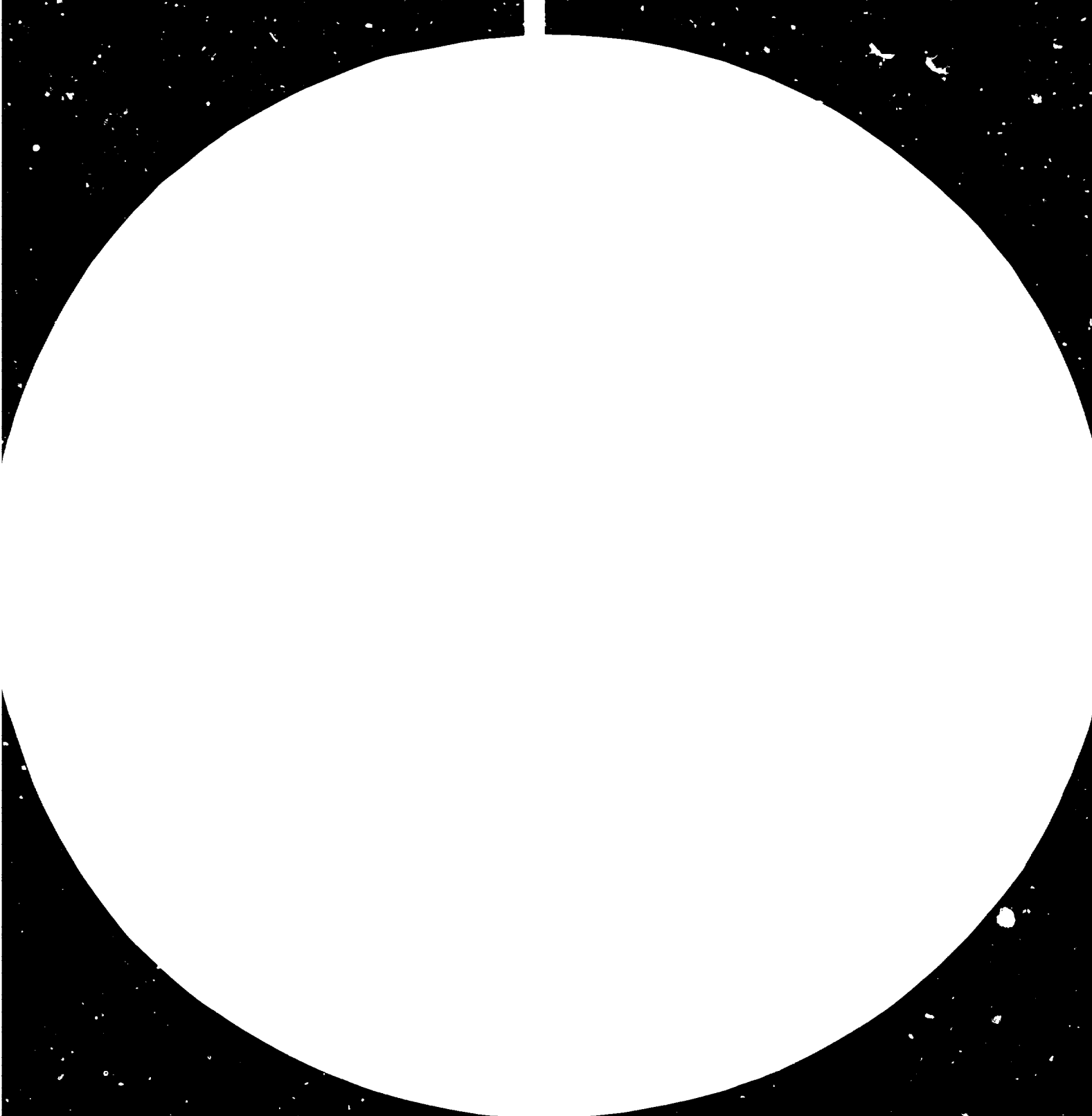
FAIR USE POLICY

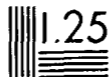
Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org





Resolution Test Chart (NBS 1963-A) (ANSI Z39-18)

Resolution Test Chart (NBS 1963-A) (ANSI Z39-18)



10247



Distr.
LIMITED

ID/WG.328/18
24 November 1980

ORIGINAL: ENGLISH

United Nations Industrial Development Organization

Round-Table Ministerial Meeting on
Agro-Industry Development
Baghdad, Iraq, 19 - 24 January 1981

DEVELOPMENT OF AGRICULTURAL PRODUCTION IN IRAQ

presented by the

Government of Iraq

UNEP/WHO/IDB

600719

80-46109

PREFACE

This document, Development of Agricultural Production 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 PRODUCTION IN IRAQ

Introduction

The area of Iraq covers 438317 km², i.e. about 175.32 million donoum. It consists of alluvial plain which forms 1/5 of the whole surface (about 93000 km²) and the desert plateau at the west which forms 3/5 of the surface or 270000 km² and the mountainous region in the north and northeast which covers about 1/5 of the surface or about 9370 km². The terrain region which is the transitional region between the lower plains of the south and the high mountains of the north-northeast which covers about 67000 km².

The cultivatable area is about 48 million donoum or about 27.37% of the whole surface. Actually, 23 million donoum only is cultivated and could be classified according to the irrigation system as follows:

Table (1)

Irrigation System	Surface/Million Donoum	Percentage to Surface
Rain	11.000	47.8%
Surface irrigation	7.000	30.4%
Pumps	4.600	20.0%
Water wheels	0.200	0.9%
Others	0.200	0.9%
TOTAL	23.000	100%

Winter field crops and vegetables cover about 55% of the total cultivated land; summer field crops and vegetables cover about 7.20%; natural forests about 33.4%; fruits and palm trees 3.4%; and natural pastures 1.0%.

The Situation of Agricultural Land Before the
Implementation of Agrarian Reform Law No. 90 of 1958

About 72.5% of land owners did not possess more than 13.3% of the total cultivated land, while 27.5% of land owners had 86.7%. The rural population was 3.2 million in 1957, while total population was about 6.3 million, and the number of landless farmers was about 2.9 million. In 1957, only 2% of land owners possessed 68% of cultivated land while 98% of land owners possessed no more than 32% of the total agricultural land.

The vast estates of big land owners and feudals along with the old management systems, repression, illiteracy, illness and poverty had their bad effects on the rural population and their production which caused a low participation of the agricultural production in the national income.

Agrarian Reform Law No. 30 of 1958

After the Revolution of 14th July 1958, the Agrarian Reform Law was issued to demolish feudalism and maltreatment of human and natural resources. This law contained four principal sections: The first deals with limitation of land ownership and land seizure of excess land to be distributed to landless farmers. The second section deals with the establishment of agricultural cooperatives. The third deals with the organizational aspects of agricultural relations. The last deals with the rights of agricultural workers.

This law eliminated the exploitation of farmers, degradation of their social and economic conditions and the maldistribution, maltreatment of agricultural land and all unjust laws concerning land property and production relations in this sector. This law demolished feudalism which represented a main pillar of colonialism and reactionary policies in the country, for they controlled most of the agricultural land and dominated the rural regions and destiny of farmers.

Agrarian Reform Law No. 117 of 1970

The first Agrarian Reform Law No. 30 of 1958 has recognized some important objectives in the economic, social and political fields, but it was not radical and wide enough, and had many defects which hindered reaching its objectives in developing the agricultural sector and achieving progress in the rural region. So, it was necessary to issue another law containing new principles to materialize radical reform. Therefore, the Agrarian Reform Law No. 117 of 1970 was issued.

It contained basic principles, where agricultural property was limited according to soil fertility, irrigation systems, and the kinds of crops. Fifteen (15) limits were decided starting from 2000 donoum of rain-fed land to the south of secured rain line, reaching the limit of 40 donoum of irrigated tobacco land in the northern region. The law authorized the Agrarian Reform Committees to fix land rights. It eliminated the Estate Rights Clearance Law No. 21 of 1938, approved the rights of planting share in orchards, and defined two methods of land distribution: personal and communal, with limits starting at 200 donoum of rain-fed land at the south of the secured rain line, ending at 4 donoum of irrigated tobacco lands in the northern region. The law also set a special section to agricultural cooperatives and the establishment of collective farms. Furthermore, it emphasized the organization of agricultural relations.

Agricultural Policy in the Political Report of the Eighth
Regional Conference of the Arab Baath Socialist Party

The Eighth Regional Conference of the Arab Baath Socialist Party had deepened the principles laid by the Seventh Regional Conference and widened them on the bases of priority and importance of achieving the socialist transition in the agricultural sector. This could be clearly

noticed in the political report which determined the strategy for this vital sector, as summarized below:-

- 1 - Achieving radical agrarian reform and eliminating feudal properties and the semi-feudal relations, by applying the Agrarian Reform Law No. 117 of 1970.
- 2 - To spread the socialist sector in its three aspects (state, collective and cooperative farms), in order to be the dominating and developed sector in all aspects.
- 3 - Achieving coordination and integration between agriculture and industry to provide most of the raw materials and goods needed by national industry and commerce.
- 4 - To eliminate all other sorts of exploitation existing in the rural regions especially in the field of commerce and link agricultural marketing and loans to the socialist sector gradually.
- 5 - Demolishing the ancient social and tribal relations and obsolete beliefs and thoughts by spreading the socialist culture among farmers.
- 6 - Reinforcing the role of women in the agricultural development process by liberating them from subdual repression and exploitation subjected to.
- 7 - Developing rural regions economically, socially, culturally and healthily and to eliminate the gap between the rural and urban regions gradually by creating socially developed rural regions.

Results Achieved by Enforcing the Agrarian Reform Laws

Land seizure: In 1978, the area of total land seized was 11.79 million donoum.

Distribution: The total area of 10.9 million donoum was distributed to 323.49 thousand farmers.

Land renting: 2.34 million donoum were rented to 86 thousand farmers.

Development of Agricultural Cooperative and Collective Farms

The first agricultural cooperative in Iraq was established in 1946 in Baghdad. After the 14th July Revolution, the cooperative movement was stimulated after long stagnation. The total number of cooperatives was 831 in 1971 and increased to 1935 in 1978 and to 2337 in 1979, of local and specialized and associated agricultural cooperatives.

Their membership increased from 126 thousand in 1971, to 331 thousand in 1978 and to about 361 thousand in 1979.

As for the allocated land to these cooperatives, it increased from 6766 donoum in 1971, to 22.9 million donoum of cultivatable land in 1978. Furthermore, 1721 local cooperatives joined the 242 associated cooperatives until 1978.

The total number of collective farms increased from 6 farms in 1972 to 77 farms in 1979. Land allocated to them increased from 24.16 thousand donoums in 1972 to 713.89 thousand donoums in 1979. This is the proof of development in the socialist agricultural sector in Iraq.

Development of State Farms

State farms before the 17th July 1968 Revolution were research and service farms, and not productive farms. Their total number before the revolution was only 5 farms with an area of 197 thousand donoum. This number increased to 41 farms with a total area of 781 thousand donoum in 1978.

Development of Agricultural Production During the Sixties

Winter Crops: Table (2) shows the development rate during 1960/1964 - 1965/1969 for seven winter crops. The wheat area increased at a rate of 24.4%, as for the production rate, the increase was 36.9%. The barley area increased as well, but its production declined. The production of lentils increased 53%, chick peas about 21%, broad beans about 39.5%, linseed about 105%.

Summer Crops: Table (3) shows the development rates during the years 1960/1964 - 1965/1969 for eight summer crops.

The area of rice increased considerably reaching the rate of 47.3%, production increased to 106.8%. As for cotton, the increase rate was 26.8% in area and 43.5% in production. An increase occurred in the production of corn, reaching 82%, sesame 94.3%, sorghum 22.4%, millet 48%, green gram 97.2%. The only decline in the production was in tobacco at a rate of 58.4%.

Table (2) Winter Crops

Crop	Average Cultivated Area/ Donnum		Total Gross Production/ Ton		Average Production/ Donnum/Kg.	
	1960/1964	1965/1969	1960/1964	1965/1969	1960/1964	1965/1969
Wheat	6031613	7505980	765926	1049120	138	139
Barley	4467509	4631600	850702	710800	190	201
Lentil	41142	39054	6431	6530	156	167
Vetch	3560	3560	599	917	169	259
Chick Peas	19420	19720	2868	3470	145	176
Broad Beans	49989	68004	12069	18228	263	268
Linseed	48847	64193	5884	12060	136	188

Table (3) Summer Crops

Rice (Paddy)	353138	520400	125488	259520	349	492
Cotton	133152	168948	24517	35183	183	222
Tobacco	54300	15782	9937	4128	182	260
Sesam	41722	65300	5803	11280	138	173
Corn	13100	15782	2260	4128	176	260
Sorghum	24340	23130	5520	6760	226	282
Millet	20616	22614	3601	5328	174	235
Green Gram	33089	55496	5636	11115	167	221

Allocations to the Agricultural Sector During the Sixties

Table (4) shows the allocations and real expenditure during the agricultural development plan 1959/1969.

Table (4)

Year	Expenditure of Temporary Eco. Plan Thousand I.D.	Detailed Eco. Plan Expenditure Thousand I.D.	Allocated Budget 1000 I.D.	Expenditure of Five-Year Eco. Plan
1959	2635	-	-	-
1960	10819	-	-	-
1961	7338	2344	-	-
1962	-	6302	-	-
1963	-	4507	-	-
1964	-	4953	-	-
1965	-	-	25133	5997
1966	-	-	29632	8499
1967	-	-	29710	11024
1968	-	-	40000	13244
1969	-	-	22000	17506

Table (5)

Detailed Allocations and Expenditures During the Plan Period
1965 - 1969

Projects	Five-Year Plan 1965-1969 Allocations	Real Expenditure 1965-1969 Thousand Dinars	Execution Rate %
Storage	8967	7773	86.7
Irrigation and Drainage	25026	22478	89.8
State Farms	21581	7654	35.5
Agrarian Reform	19926	5881	29.5
Silos	1684	497	29.5
Ground Water	7429	3935	53.0
Livestock and Plant Resources	26426	7167	27.1
Miscellaneous	5435	886	16.0
TOTAL	146474	56271	38.4

The amount of expenditure from the budget allocated to this plan was 56271 thousand Dinar, which means that real expenditure did not exceed 38.4%. This shows a decline in real execution rate and the non-implementation of state farms, silos and plant and livestock production projects.

The Strategy of National Development Plan
1976/1978 in Agriculture

This strategy could be demonstrated by the following steps and measures:

- 1 - Deepening the socialist transition in rural regions by concentrating on state, collective and cooperative farms.

- 2 - Applying the principle of specialization whenever possible.
- 3 - Elevating the performance level in agricultural institutions by reducing losses and waste and by increasing the average productivity of the production factors.
- 4 - Concentrating on vertical agriculture and to develop soil projects which are still needing complementary projects.
- 5 - Coordinating irrigation, drainage and land reclamation projects on geographical and economic bases by giving special care to those projects that have already reached a high level of implementation and could be elevated from the set-up to the productive stage during the plan period.
- 6 - Using the applied research results and to spread modern technology in production and marketing processes by securing human and monetary needs, with special concentration on increasing pilot agricultural projects to cover the area of 2 million donoum.
- 7 - Maximizing land and water investment performance and to reduce water losses.

Objectives of the National Development Plan 1976/1980

The plan aims at attaining the following objectives:

- 1 - To accomplish an average growth rate of 8.0% annually during the plan period.
- 2 - Increasing the cultivated area in irrigated regions and maximize the use of available water resources.
- 3 - To satisfy an important part of the increasing demand for agricultural products with special emphasis on eliminating the sharp annual fluctuations in wheat production. Hence, the future plan aims at making Iraq a wheat exporting country to be able to satisfy the needs of the Arab market for this major product.

- 4 - Establish coordination between industry and agriculture during the plan period.
- 5 - Emphasize the leading role of state, collective and cooperative farms by developing methods to ensure high production and productivity rates and to introduce the socialist relations in the rural regions.
- 6 - To ascertain the utilization of human resources in this sector by preparing a detailed plan to secure the needed cadres according to the requirements of agricultural development.
- 7 - Concentrating on a certain number of existing agricultural projects, having clear possibilities of progress such as the Mussayab, Al-Khalis, Al-Ishaki, Abu-Jhuraib and Al-Dahmaj and to establish agricultural complexes in them, in order to apply modern scientific management methods, so as to maximize their specialized production capacities for the first phase in the preparation of annual production plans, and to introduce socialist competition to increase the performance in some agricultural operations.
- 8 - Develop the potential capacities in the northern region after peace has been established and implement the agrarian reform laws.
- 9 - Maximizing the uses of agricultural machines and tools.
- 10 - Concentrating on the development of fish resources and to investigate the lakes and marshes to promote fish production as an important source of protein.
- 11 - Increasing fodder production and concentrate on meat production by implementing integrated units for raisin and fat.
- 12 - To implement radical improvement in the marketing system of agricultural products in order to ensure low price in supplying basic foodstuff for the population and to reduce waste and promote quality.
- 13 - Improving rural regions conditions, increase social services and to connect roads with main highways according to production priorities of the regions.

Development of Agricultural Production During the Seventies

Winter Crops:

Table (6) shows the development of production during 1970/1975 - 1975/1978 for ten winter crops:

Table (6)

Crop	Average Cultivated Area/Donoum		Average Production Ton		Average Yield Kg.	
	1970/1975	1975/1978	1970/75	1975/78	1970/75	1975/78
Wheat	5647980	5136733	1317780	969300	224.3	199.6
Barley	2137660	2434533	562720	551400	261.6	227.0
Lentil	26183	28148	4177	6506	163.6	225.6
Chick Peas	32122	57338	5711	7390	154.3	128.6
Vetch	2670	3685	523	663	216.8	176.5
Linseed	15885	3671	2567	793	175.4	216.5
Broad Beans	73260	60802	17449	15790	238.2	263.0
Onions	56494	40610	29277	75669	1585.0	1864.0
Garlic	2273	2138	1307	2427	632.0	1734.0
Sugar Beet	12088	10825	63501	67074	4695.8	5198.3

This table shows a decline in the average production during 1975-1978 compared to the period 1970-1975 at a rate of 26.4% for wheat, 3.0% for barley, 69.3% for linseed, 9.5% for broad beans, 15.2% for onions. At the same time an increase is shown at a rate of 55.7% for lentil, 29.3% for chick peas, 26.7% for vetch, 85.7% for garlic, 5.6% for sugar beet.

The decline rate of 26.4% in wheat production is very regrettable especially because of its importance as a main food product. The production during the period 1970/1971 - 1974/1975 was sufficient and exceeded 1.3 million tons, but it declined during the period 1975-1978

to be 0.96 million tons. The main reason for this decline was the unfavorable dry climatic conditions (rain scarcity) which affected the country and caused low production in the rain-fed regions. As for barley, a slight decline in production was felt but the decline in linseed was due to the reduction in cultivated area.

Summer Crops:

Table (7) shows the development for 12 summer crops during the period 1970/1975 - 1975/1978:

Table (7)

Crop	Average Cultivated Area/Donoum		Average Production/ Ton		Average Yield/ Kg.	
	1971/75	1976/78	1971/76	1976/78	1971/75	1976/78
Rice (paddy)	262714	227480	172196	170183	655.4	753.2
Corn	41568	118065	18158	77549	44.5.4	724.8
Sorghum	22892	34567	5741	76302	252.2	232.3
Millet	11555	2799	2526	585	214.6	186.0
Sesame	56167	52353	8132	6765	142.2	130.6
Cotton	126998	84503	43548	24625	346.2	283.0
Green Gram	51956	38186	2638	6083	167.6	159.0
Black Eye Bean	12590	2400	2797	522	224.4	216.3
Ground Nuts	1159	909				
Sugar Cane	12897	13972	106343	160709	8337.5	11444.6
Tobacco	41925*	43610*	8926*	8321	205.5	192.3
Tunbak	1830*	1298	158*	186	84.5	150.6

As it can be seen from Table (7) a decline had occurred during the period 1971/1975 - 1976/1978 in the production of millet at a rate of 76.8%, sesame at a rate of 86.8%, cotton 43.4%, green gram 29.5%, black eye bean 81.3%. As for ground nut the decline was minor at 7.7% and so was with the case of tobacco which was 6.7%.

* Average cultivated land and average production for tobacco and tunbak are for the period 1974-1978 instead of 1971-1975.

On the other hand, an increase could be noticed during the same period for rice production at a rate of 23.5%, corn at a rate of 326.8%, sorghum 32.9%, sugar cane 51.1%, tunbak 17.7%.

What is surprising on one hand, is that the decline registered were mostly in industrial crops such as cotton, sesame, ground nut, and tobacco; and on the other hand, an excellent increase was noticed in the average production of corn, sugarcane, and a minor increase in rice production.

Allocations for the Agricultural Sector in the National
Development Plan 1970/1971 - 1971/1975

Table (8) shows the allocations and real expenditure in the National Development Plan 1970/1971 - 1971/1975 for the agricultural sector:

Table (8)

Year	Allocations 1000 ID	Real Expenditure 1000 ID	Expenditure Rate %
1970/1971	30 700	14 058	45 79
1971/1972	60 000	49 310	82.18
1972/1973	23 210	29 276	126 12
1973/1974	65 000	37 726	58 13
1974/1975	190 000	78 043	41 07
1975	207 000	99 903	48 14

This table shows that in spite of the increase of 6-7 times in annual allocations of 1974/1975 from that of 1970/1971 - real expenditure rate was low for most years. This rate fluctuated and reached its highest point in 1972/1973 and the lowest in 1974/1975.

Allocations for the Agricultural Sector in the
National Development Plan 1976/1978

Table (9) shows the allocations and real expenditure during the period 1976/1978.

Table (9)

Year	Allocations 1000 ID	Real Expenditure 1000 ID	Expenditure Rate %
1976	268 000	231 669	86 44
1977	389 377	264 353	67 80
1978	500 000	-	-

This table shows that in spite of the annual increase in allocations for the agricultural sector during this period, real expenditures still declined in 1977.

Development of the Agricultural Investment of the
Ministry of Agriculture and Agrarian Reform

The magnitude of expenditure had been developed continuously since 1970/1971 and the expenditure rate had increased as well. Table (10) shows that allocations to the agricultural investments have increased from 6.3 million ID in 1970/1971 to 266 million ID in 1978. Real expenditure increased as well from 66% to about 90% for the same period.

Table (10)

Year	Allocations 1000 ID	Real Expenditure 1000 ID	Expenditure Rate %
1970/1971	6.364	4.213	66
1971/1972	27.946	16.636	59
1972/1973	14.206	9.100	64
1973/1974	31.569	18.936	59
1974/1975	156.530	105.493	67
1975 (9 months)	154.820	128.014	82
1976	149.500	152.169	101
1977	206.078	176.118	85
1978	265.980	239.200	89.9

Development Rates Achieved in the Agricultural Sector
During the Period 1970-1975

Development rates achieved was about 1.8% annually, which is a low rate, considering the forseen target development rate in the economic development plan for 1970-1974 which was supposed to be 7%. Undoubtedly, the main reason for this decline was the decrease in cultivated land in the irrigated regions. Available data shows that the total cultivated lands in the irrigated regions in 1975 was 4.6 million donoum while it was 5.8 million donoum in 1971. This could be attributed to water shortage in the Fuphrates River during that period.

Development of National Agricultural Products
During the Period 1970/1978 (Current Prices)

During 1970, agricultural production increased from 175.6 million ID to 516.1 million ID in 1978, i.e. at a rate of 294% as shown in Table (11).

Table (11)

Year	Agricultural Production Million ID	Year	Agricultural Production Million ID
1970	175.6	1974	263.9
1971	181.2	1975	281.5
1972	235.3	1976	391.3
1973	188.2	1977	373.9
		1978	516.1

As it can be seen, there is an increase in average personal income of agricultural origin in rural areas during the period 1970-1978 (current prices) from 40.9 ID in 1970 to 118.3 ID in 1978, which means an increase rate of 289% as shown in Table (12) below.

Table (12)

Year	Ave. Personal Income ID	Year	Average Personal Income ID
1970	40.9	1974	54.5
1971	42.0	1975	64.7
1972	54.4	1976	89.9
1973	43.4	1977	85.9
		1978	118.3

Development of Vegetables Production

In recent years, interest has increased in vegetable culture, farmers started to produce vegetables to satisfy the growing local demand which has increased due to the population growth, industrial development, personal income, income and purchasing power increase.

Table (13) shows the increase in total area planted with vegetables and their gross value for the years 1961/1977.

Table (13)

Year	Total Area Planted 1000 Donoum	Gross Production Value Million I. D.
1961	447.82	38.63
1977	762.24	92.08

This table indicates an increase in gross production value of vegetables at a rate of 238.3% from 1961 to 1967.

Table (14) shows the annual development in vegetables production during the period 1974/1978.

Table (14)

Year	Total Area Planted 1000 Donoum	Increase Rate %	Gross Prod. Million Ton	Increase Rate %
1974	650.17	-	1.46	-
1975	714.67	9.92	1.58	8.2
1976	791.05	10.68	1.96	24.0
1977	832.18	5.19	2.08	5.1
1978	814.93	2.08	2.06	0.9

This table shows an increase in planted vegetable area and gross annual production, except during the year 1978. The highest registered increase was in 1976.

The Development of Fruit Culture During 1971/1978

The areas cultivated with fruit trees have been increased from about 605 thousand donoum in 1971 to 757 thousand donoum in 1978.

The production of fruit trees had increased as well in the nurseries of the Ministry of Agriculture and Agrarian Reform from 156 thousand trees in 1965/1967 to 6 million trees in 1978/1979.

Factors Affecting the Development of Agricultural Production

1 - Production of Improved Seeds

The production of various improved seeds have increased to satisfy local demand. Studies have shown that 15-38% of the improvement in crop yield is due to good quality and hereditary characters of these seeds.

The production plan for improved seeds in 1980 is supposed to cover 46% of the total area of wheat, barley, rice, corn, sugar beet, cotton, oil crops, beans, potato, vegetables and green fodder. As for the quantity needed to cultivate this area, it is estimated to be about 128 thousand tons.

Table (15) shows the estimated increase per donoum yield of some field crops as a result of the implementation of the production plan of using improved seeds for the years 1975/1976 - 1978/1979.

Table (15)

Yield	Average Yield Per Donoum/Kg.		Increase/Kg.
	Before the Plan	After the Plan	
Wheat	150	400	250
Barley	180	300	120
Rice	400	600	200
Jotton	200	300	100
Corn	250	500	250
Sesame	150	250	100

2 - Pest Control

Surveys on agricultural pests in Iraq shows that the existing pests in the country are about 3500 kinds, 1000 of them are harmful, 600 are plant diseases. Their percentage of damage are as follows:

	<u>Percentage of Damage</u>
Insects	13.8%
Plant diseases	11.6%
Weeds	9.5%
TOTAL	<u>34.9%</u>

The government is putting an emphasis on providing pest control needs such as sprayers and pesticides, at the same time control on major pests is free of charge. Consumption of pesticides had increased as shown in Table (16).

Table (16)

Year	Powder/Ton	Wetable Powders/Ton	Liquid Pesticides 1000 Litres
1969	46.15	8.11	147.30
1970	132.50	13.88	196.38
1971	88.11	11.05	304.05
1972	215.47	45.08	100.09
1973	143.85	47.28	188.20
TOTAL	626.08	125.40	936.04

As for the area planned for control during 1975/1979, they are as follows:

Table (17)

Crop	Areas Planned for Control - Thousand Donoum				
	1975	1976	1977	1978	1979
Wheat	3500	4500	4500	5000	6000
Rice	42	45	50	60	70
Corn	100	106	107	108	108
Cotton	153	153	156	162	180
Oil Crops	25	27	30	32	33
Palm Trees	165	172	180	183	199
Citrus	65	72	86	93	100
Apple Trees	5	6	7	8	9
Pomegranate	1	1	1	1	1
Deciduous Fruits	140	150	160	170	180
Vegetables	400	420	450	470	500
Others	1432	1580	1610	1610	1790
TOTAL	6048	6422	6937	7297	9170

The above table shows that the areas planned for pest control increased 151.6% from 1975 to 1979; control activities have reduced the pest damage of different crops. Actually, pest control offices are spread all over the country, and airplanes are used for pest control purposes widely. The economic benefits of pest control during the period 1973/1976 are as follows:

Table (18)

Year	Controlled Areas Million Donoum	Economic Benefits Million I. D.
1973	2.0	12
1974	2.5	15
1975	5.5	25
1976	6.5	28

Agricultural Research

Agricultural research has been developed enormously. Many centers, institutes and research stations have been established with high financing allocations. In this connection, we can name the following research establishments: The Agricultural Research Centre, Date and Palm Research Centre, Natural Resources Centre, as well as agricultural colleges at the universities of Mosul, Sulaimaniyah, Baghdad and Basrah, in addition to the General Organization for Applied Agricultural Research. All these establishments deal with various agricultural researches to find the best scientific measures for the development of agriculture.

The Development Plan which included the agricultural scientific research plan for the period 1974-1980, can be seen in Table (19) as follows:

Table (19)

Year	Scientists and Engineers In Research and Development	Technicians in Research and Development	Total Expenditure for R and D in Million I. D.
1974	1486	376	4.7
1975	1620	570	9.8
1976	2110	1004	13.6
1977	2760	1766	18.8
1978	3555	3109	25.9
1979	4892	5471	35.8
1980	6305	9458	49.4

This table shows that the number of scientists and engineers dealing with scientific research has increased 4 times, that of technicians 25 times and expenditures on research and development also increased 6.6 times from 1974 to 1980.

Agriculture Extension and Education

The extension and educational activities play an important role in the formation of developed and properly educated rural regions. Furthermore, such activities allow an important change in the thoughts of rural population to help them accepting modern scientific methods in order to benefit from the available possibilities to increase their production and to achieve a better living standard. The Agricultural Extension Section was established in 1946, gradually it developed to a general organization to disseminate agricultural education among farmers in order to increase their agricultural production by way of training them to use modern production facilities, to observe field explanations and trials and to see scientific constructional films and agricultural bulletins. At the same time to develop rural youth and teaching women home economics, folklore works and sewing. Important

developments have been achieved in these directions since the 17th July 1968 Revolution. Agricultural extension and education activities are spread all over the country, by concentrating the efforts on human productive resources.

Lately, a general organization for training was established to provide training courses for farmers to increase their knowledge and transfer the results of agricultural research by simple means and language.

Pilot Agriculture

The high committee for pilot agriculture had laid the measures to develop scientific agricultural methods of wheat, rice and sunflower. These measures provided the possibilities of increasing oil crops cultivation and recommended to follow agricultural rotation to sustain soil fertility maps and maximum agricultural machinery utilization, secure the supply of improved seeds and the needed quantities of fertilizers to the production regions, stores and pesticides and increasing the agricultural extension activities among farmers.

The pilot agricultural plan for 1979 was as follows:

Table (20)

Summer Crops		Winter Crops	
Crops	Area/Donoum	Crops	Area/Donoum
Rice	126 257	Wheat	481 178
Sunflower	17 000	Barley	75 600
Cotton	6 251	Linseed	14 000
Corn	400	Safflower	4 000
TOTAL	149 878	TOTAL	574 788
GRAND TOTAL		724 586	

The inclusion of this large area in pilot agriculture is considered to be a great development in applying developed agricultural methods to increase production and productivity per donoum.

Protected Agriculture

A considerable development has been achieved in protected vegetable cultivation in tunnels and plastic houses especially to produce tomato and cucumber. By using protected agriculture, farmers are able to produce summer vegetables in winter and early spring; that means to produce outside the normal seasons, and also to achieve more production per unit area. Production in plastic houses started in 1974, their total number in 1979 reached 1369 houses, each of them 180 square meters.

Glass houses are available in the State Agriculture Establishment in Khalis that covers 196 donoum, as well as in the State Agriculture Establishment in Nahrawan that cover 100 donoum.

Table (12) shows the development achieved in covered agriculture in plastic and glass houses.

Agricultural Mechanization

Remarkable progress have been accomplished in the use of agricultural machinery to modernize agriculture by applying technology. Animal force was used in 97% of the different agricultural operations in 1948, but in 1968, it represented no more than 31%. In 1978, the mechanical force usage increased to 69% as compared to 3% in 1948. This reflects the increase of land productivity and the reduction of labour in rural regions to make it available in the other productive activities.

The participation of the socialist sector in agricultural mechanization increased, the number of tractors which was 1522 in 1968 increased to 5975 in 1978, i.e. an increase of 285%. As for crop harvesters, it was 283 in number during the year 1968 and became 2279 in 1978, i.e. an increase of 800%.

Table (22) shows the detailed development of tractors and crop harvesters according to agricultural sectors.

Table (21)

Year	Crop	No.	PLASTIC HOUSES			No.	GLASS HOUSES		
			Total Area/ Donoum	Gross Prod/ Ton	Average Prod/Ton		Total Area/ Donoum	Gross Prod/ Ton	Average Prod/Ton
1976/77	Tomato	143	10.3	131	12.7	1	6	72	23.5
	Cucumber	265	19	231	12	1	6	198	48
	Vegetables	165	11.9	38	-	-	-	-	-
	TOTAL	573	41.2	400	24.7	2	12	270	71.5
1977/78	Tomato	275	20	296.41	15	3	18	258	23
	Cucumber	291	21	385.86	18.4	3	18	567	48
	Vegetables	82	6	21.76	-	2	12	48	-
	TOTAL	648	47	704.03	33.4	8	48	873	71

Table (22)

Year	TRACTORS			HARVESTERS		
	Socialist Sector State	Private Sector Coop.	Total	Socialist Sector State	Private Sector Coop.	Total
1948	-	-	677	-	-	-
1958	129	-	2404	33	-	337
1968	1552	-	9763	283	-	2352
1978	5076	899	22100	2279	-	3529

At present, renting stations for agricultural machinery are spread all over the country. Their number reached 20 stations which provide services to farmers and agricultural projects at low prices.

As for the locally manufactured machinery, the number of Antar tractors increased from 1200 tractors in 1972 to 4000 tractors in 1977. Their power increased as well from 60 horsepower to 70 and 80, in order to substitute the import of tractors having the same qualifications.

Agricultural Loans

A great deal of progress had been achieved in agricultural lending. The amount of loans from Agricultural Cooperative Bank increased from 1.9 million I.D. in 1969/1970 to 21.2 million I.D. in 1978. Loans to agricultural cooperatives were 1.7 million I.D. in 1970/1971 and increased to 13.7 million I.D. in 1978.

Storage

Storage services developed greatly in the country, storage capacity in 1968 was small but improved by establishing cold stores and freezing rooms. The number of cold stores increased from 9 stores in 1976 with a capacity of 16013 tons to 42 stores with a capacity of 45975 tons in 1978. As for freezing rooms, they increased from 7 with a capacity of 5464 tons in 1976 to 14 with a capacity of 12200 tons in 1978.

The number of double purpose stores increased as well to become 3 stores with a capacity of 3197 tons in 1978. As for cereal and rice stores, they increased from 7 stores with a capacity of 162 thousand tons in 1976 to 12 stores with a capacity of 212 thousand tons in 1978.

The Needs of Local Industry for Agricultural Raw Materials

Table (23) shows the projected needs in 1980 for local industries for agricultural products compared to the base year 1975.

Table (23)

Product	Unit Ton	Needs in 1975	Production	Project Needs 1980	Annual Growth Rate %
Sugar Cane	1000	400	104.1	400	0
Sugar Beet	1000	300	49.4	500	10.8
Oil Seeds	1000	500	38.4	193	31.0
Dates	1000	8	389.0	105	68.0
Cotton Fiber	1000	75	38.5	138	13.0

The above table shows a clear increase in industrial needs for sugar beet, oil seeds, dates, cotton fiber; however, the production is still below the demand of local industries.

Problems of Growth and Constraints in the Agricultural Sector

The problems that face the development of agricultural production in Iraq can be summarized as follows:

- 1 - Soil salinity and its productivity decline.
- 2 - Low productivity.
- 3 - Scattered investments which cause lowering of production factors related to agriculture and its reflection on the average growth rate.

- 4 - The uses of ancient means in agriculture, the abandonment of agricultural rotation, and the insistence of farmers to plant classic crops.
- 5 - The non-integration in the animal and plant production.
- 6 - The absence of investments priorities in different sectors according to their potentialities.
- 7 - Farmer's low income due to low productivity per donoum and price fluctuations of agricultural products as well as the backwardness of the marketing system.
- 8 - Immigration from rural to urban regions.



