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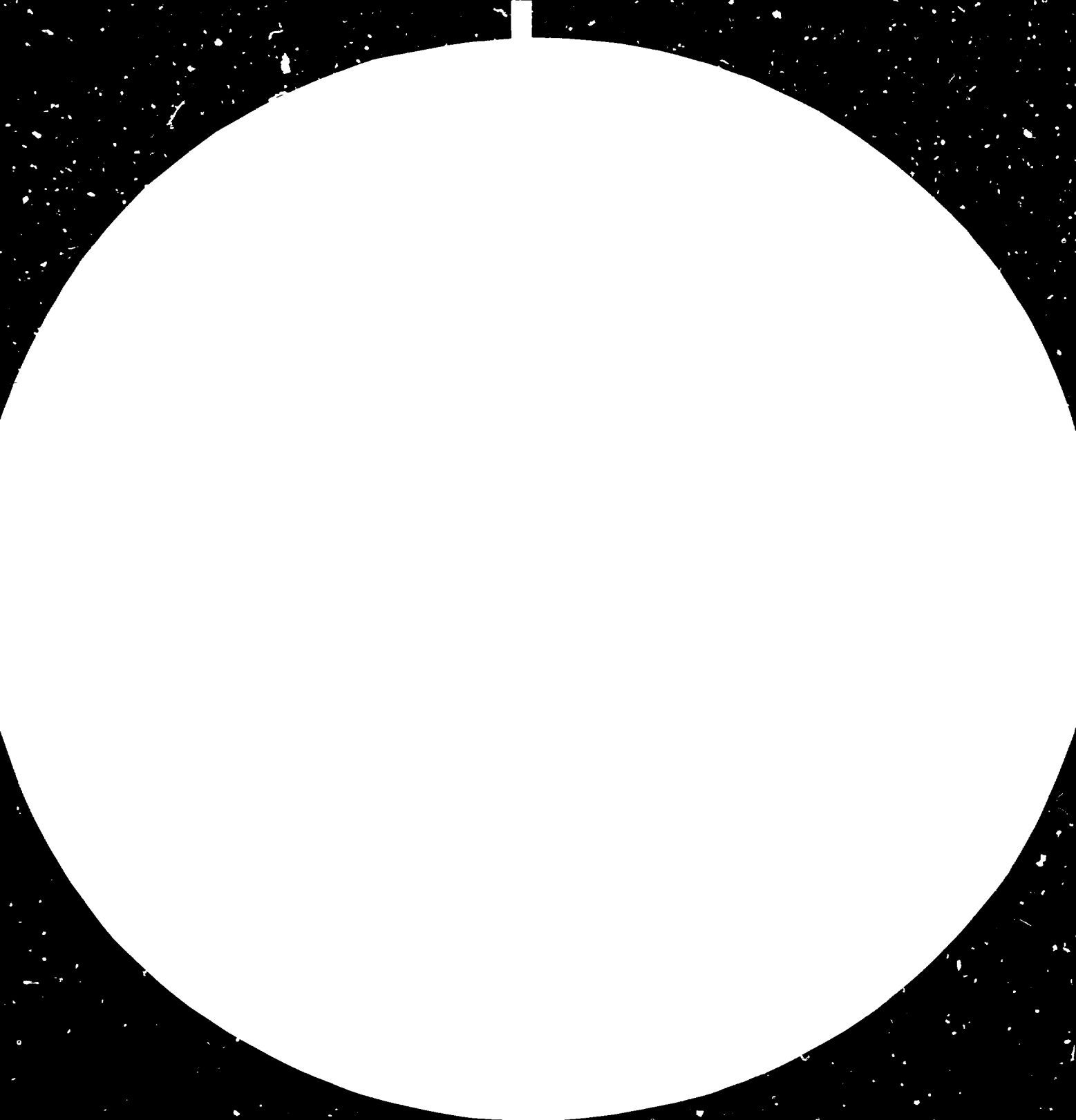
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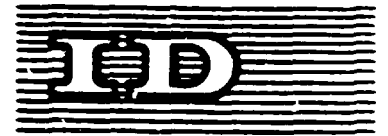


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DATE INDUSTRY IN IRAQ

presented by the

Government of Iraq

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PREFACE

This document, Date Industry 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 circumstances 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

DATE INDUSTRY IN IRAQ

Introduction

The scientific botanical name of the date palm tree is (Phoenix Dactylifera L.). The Phoenicians were the first group of people who participated in spreading palm tree cultivation in the Mediterranean region. From their name, the word phoenix was derived.

Palm tree is considered one of the oldest trees cultivated in the Arab region. It was not by chance that palm trees were widely cultivated in the Arab region, Middle East and other countries like Spain and America, for in most of these countries, there are suitable climatic conditions for palm tree cultivation and date production - moderate winter, hot summer, scarce rain and low humidity during the ripening season. These are the main factors for success in growing palm trees and producing dates.

It is not astonishing that a palm tree is considered a blessed tree, which is mentioned several times in holy books, for it has many benefits: vines and citrus are interplanted under and between palm trees. From date fruits, wine and sweets are made. Its fruit pit is used as fodder; from its trunk, roofs and house pillars are made; its leaf mid-rib is made into beds, chairs and tables; fuel from its fibre; and its leaves are made into some kind of household containers and covers.

In addition to its nutritional value, dates are easy to handle, transport, and they are storageable all year round without considerable damage. The date fruit can be consumed in several ways. Since ancient time, it has played an important role in providing nutrition to the Arab population.

Since thousand years, several methods were used for packing dates in various containers to protect the fruits from damage and to facilitate their commercial exchange for human consumption and fodder uses. Such type of packing the dates without affecting their shape or sugar content is called the date packing industry.

With the development of science and the improvement of technology, a new date product industry was developed which has depended on the transformation of date sugar and the fruit shape into new products like alcohol, vinegar, liquid sugar, syrup, pastes,...etc.

Table (1)

Palm Tree Distribution and World Production of Dates.

Country	Palm Trees Number (Thousand)	Percentage %	Average Prod. of Dates for 1971-76 (Thousand Ton)	Percentage %
Iraq	22000	25	462.2	19.4
Egypt	7000		373.3	17.0
Algeria	7500		165.8	7.5
Libya	4500		61.9	2.8
Saudi Arabia	7000		256.3	11.6
Morocco	5000		94.8	4.3
Oman	1000		54.2	2.3
Tunisia	2250		45.5	2.1
Yemen (N. and S.)	2700		87.4	4.0
Sudan	1900		87.8	4.0
Moritania,)				
Bahrain,)	1000		35.1	1.5
Somalia,)				
TOTAL (Arab)	61950	72.4	1688.3	76.6

.../Table (1)

Country	Palm Trees Number (Thousand)	Percentage %	Average Prod. of Dates for 1971-76 (Thousand Ton)	Percentage %
Iran	20000		302.2	13.8
Pakistan	17000		140.0	6.4
U.S.A.	250		17.8	0.9
Spain	220		15.7	0.7
Mexico	150		2.7	0.1
Other Countries	1266		33.3	1.5
Total World	88536		2201.5	100.0

Date Production in the World

Palm trees in the world are estimated to be about 85.5 million with 62 million in the Arab countries constituting 72%. In Iraq, there exists 22 million palm trees, which is about a quarter of the palm trees of the world.

World production of dates was about 2.2 million tons during 1971-1976. The Arab countries produced 1.7 million tons, three quarters of the world production. The Iraqi share was about 20% of the world production during the same period. This is shown in Tables (1) and (2).

Table (2)

Date Production in Arab Countries for 1975, 1976, 1977.

Country	Production Volume in Thousand Tons		
	1975	1976	1977
Iraq	496	498	375
Egypt	415	409	417
Saudi Arabia	262	262	265
Algeria	182	185	140
Sudan	102	105	106
Morocco	100	102	70
Libya	62	95	70
Oman	50	50	50
Tunisia	45	46	50
Yemen	42	42	41
Bahrain	16	16	16
Moritania	13	13	14
Kuwait	1	1	1
Somal	6	6	6
TOTAL	1858	1870	1691
Other World Countries	541	564	558
TOTAL	2399	2434	4249
Percentage to the World Production	77.4	76.8	75.3

Date Consumption in the World

The consumption of the world production of dates is as follows:

- A - Direct human consumption before the full ripening of the fruit (during the periods of Khalal and Rutab) and full ripening (Tamor period). During this period, dates become ready for storing, generally filled in packages with different shapes and weight.

Consumption period is during the whole year. It increases during the religious feasts such as Christmas and New Year's eve and during Ramadan month. Dates are pressed either manually or by modern machinery. Dates consumed in this way are estimated to be about 90% of the world production of dates.

- B - Indirect consumption: By transforming dates to pastry, concentrate juice, vinegar, liquid sugar or protein,...etc. and consumed directly or used in some food industries. These derivatives are produced by using modern machines and technology to get stable and specified quality. For this purpose, about 2.5% of the world's annual production is used.

- C - Direct utilization of dates and their residues to manufacture animal fodder: It might be mixed with other components to balance the fodder, the volume thus, consumption is estimated to be about 7.5% of the annual world production. Table (3) shows average personal consumption in some major consuming countries in the world (which might be a producing country or importing one).

Table (3)

Average Consumption of Dates Per Capita in the World
in Kg/Year for the Years 1970-75

Country	Volume Consumed Ton/Year	Population (Million)	Kg/Person	Consumption
Egypt	376546	36	10.5	-human consumption -fodder
Sudan	91729	22	4.2	-human consumption -fodder -alcohol
Morocco	94522	15	6.4	-human consumption
Algeria	153746	15	10.2	-human consumption -fodder
Iraq	100000	12	8.5	-human consumption -alcohol -vinegar, date syrup -fodder
Syria	15000	7	2.1	-human consumption -date syrup, fodder
Tunisia	40560	6	6.8	-human consumption -fodder
Jordan	4389	2.5	1.8	-human consumption -fodder -alcohol
Lebanon	4431	3	1.5	-human consumption -alcohol
Libya	61900	2.3	26.5	-human consumption -fodder -date syrup
Kuwait	9613	1	9.6	-human consumption -fodder
Oman	50967	1.5	34	-human consumption -fodder
Yemen (N. and S.)	110000	8	13.8	-human consumption -fodder
Moritania and Somal	26000	6	4.3	-human consumption -fodder
Iran	269964	32	8.4	-human consumption -fodder -date syrup
Pakistan	146044	77	1.9	-human consumption -fodder
China	71082	900	0.08	-human consumption -alcohol
India	42545	563	0.075	-human consumption
France	8817	52	0.17	-human consumption
URSS	30336	220	0.14	-human consumption
U.K.	14811	55	0.27	-human consumption
U.S.A.	20000	220	0.09	-human consumption

The Economic and Nutritional Value of Dates

The volume of exported dates during 1964-1975 is about 356.256 thousand tons, representing 15% of the total production in the world. Its average value is about 49.25 million dollars. The Arab countries exported 312.110 thousand tons for 34.51 million dollars which constitute 87.6% of production volume and 70% of the total value of the world exported dates. These figures reflect the important position of the Arab countries in the world in dates commerce. Iraq export for the same period represent 71.8% of the world export and 47.4% of its value. Iraq, therefore, is the country in the world with the highest volume and value of exported dates.

As for Iran, its export of dates constitute 8.2% of the total volume and 7.1% of its value. Algeria follows for 4.6% of volume and 14.2 % of value, then France, with 2.2% of volume and 15.1% of the exported value.

As for the U.S.A., it has 1.2% of the volume exported and 5.6% of its value. Tunisia has 1.3% and 5.7% of it.

From the above-mentioned figures, it is clear that the average value of one ton dates exported from Iraq and Iran is low compared to that exported from France, U.S.A., Tunisia and Algeria. This is due to the difference in production volume, grades, standard of packaging and living standards in the importing countries.

Table (4)

Average Dates Quantities and Values in the Main
Exporting Countries for the period 1965-1969 and
1970-1975. Volume in Tons, Value in (1000) Dollars.

Country	Average Exported Dates for 1965-1969		Average Exported Dates for 1970-1975	
	Quantity	value	Quantity	Value
Total world	350880	38738	361633	59762
Algeria	20862	7057	12052	7232
Tunisia	3133	1288	5750	4558
Iraq	277680	18496	280100	27857
Oman	-	-	3233	319
Lebanon	468	41	2422	158
Kuwait	188	14	722	92
U.S.A.	2847	1792	5079	3905
Iran	25834	2266	17690	5021
France	9260	6776	6503	7918
TOTAL Arab Countries	310020	27269	310200	41760
Percentage of the Arab Countries to the World Export	88.4%	70.4%	86.9%	69.9%

Average percentage of Arab export to the world for the period
1965-1975 is:

87.6% in volume and 70.1% in value.

Total average world export during 1965-1975 is
356256 tons of a value equal to 49.250 million
dollars.

Average Arab export for the period 1965-1975 is 312110 tons at a value of 34.514 million dollars.

It is worthwhile to mention that, some countries like France and U.S.A. import dates from the main producing countries to be repacked and exported at high prices.

Asia had the highest volume of imported dates which was 59.7% of the total import of the world for the years 1970-1975. This volume represent the value of 30.5% of the total imported dates. The Arab countries are in the second position - they imported 25.3% of the volume at a value of 11.2% during the same period. As for the Socialist countries, they have imported 12.1% at a value of 12.5%. Western Europe imported 13.9% at a value of 40.5% during the same period. This is shown in Table (5).

Table (5)

Average Quantity of Imported Dates in the World for the Period 1970 - 1975.

Country	Volume %	Value %	Notes
World	100	100	Including the Arab Countries
Africa	6.5	4.6	"
Asia	59.6	30.5	"
North America	6	8.5	
Latin America	0.1	0.7	
Western Europe	13.9	40.5	
Socialist countries in Europe	12.1	12.5	
Australia and New Zealand	1.7	2.7	
Arab countries	25.3	11.2	
Other countries	0.1	0.1	

The participation rate of dates in the agricultural production of the world is low. As an example, the following table includes its participation rate in the agricultural sector in Iraq in current prices for the years 1964-1976.

Table (6)

Dates Participation in Agricultural Production in Iraq for the years 1964-1976 (Thousand Dinars)

Year	Produced Dates Value	Agricultural Value	Dates Participation %
1964	7259	140021	5.5
1965	6440	160175	4.9
1966	10347	170855	2.2
1967	6563	197159	3.2
1968	5495	205849	1.7
1969	9399	204405	4.7
1970	6364	317585	4.9
Average	7524	184721	4.1
1976	8122	454461	1.8

For a better understanding of the importance of dates in the economy of the producing and exporting countries, the following table shows the value of exported dates compared to the total exported agricultural products in thousand U.S. dollars.

Table (7)

Period Average 1969-1974	Algeria	Tunisia	Iraq	Saudi Arabia	Iran	France
Exported dates value	6212.5	3935.5	26666	853.4	4497.5	719318
Agri. exported value %	137272 4.5	110317 3.6	52672 50.1	5372 16.2	171302 2.6	508666 1.4

The above table shows clearly the important position of the date exports in the foreign trade of Iraq compared to other Arab countries and the other main exporting countries. Statistics show that dates participation in the total production of food industry in Iraq was about 4.3% in 1974, its participation in the added value was 12.6%, absorbed about 13.6% of manpower in the same year.

Table (8)

Dates Exportation Value and its Percentage to Agricultural Exportation Value for Some Arab Countries for 1975 - 1976.

Country	Value in Thousand Dollar		Percentage	
	1975	1976	1975	1976
Iraq				
Agri. Export	58339	63668		
Dates Export	38635	39923	66.5	62.7
Algeria				
Agri. Export	146747	154617		
Dates Export	6000	7325	4.1	4.7
Tunisia				
Agri. Export	165944	154374		
Dates Export	5620	6147	3.4	4.0
Saudi Arabia				
Agri. Export	23996	24327		
Dates Export	1300	3469	5.4	14.3

Dates are considered as one of the agricultural raw materials rich in sugar content. It is a delicious fruit as well as an important nutritional source in all the producing countries. In addition to this, it provides the raw material for several food industries and it participates in protecting and developing livestock for it enters in processing fodder.

Sugar content constitute about 60% of the fruit weight, therefore, it is an important source of energy for the human body. Below, is the average chemical analysis of dates:

Water	15-20%
Sugar Materials	55-65%
Pit	12%
Insoluble Materials	6-8 %
Soluble Non-Sugar Materials	2-5 %

Taking 100 grams of dates provide the human body with about 280 calories, which equals what the body gets from about the same quantity of bread or potato. This quantity of dates contain about 2 grams of protein and 1.5 grams of mineral salts.

Date Industries

A - Date Packing Industry

This is considered an old industry in Iraq and in neighbouring countries. Producers are accustomed to pack dates manually in palm leaf-bags or in animal skin to preserve dates from damage, for easy handling and to exchange it commercially. The oldest and simplest mode of manufacturing is the cooked Khalal, where fruit is boiled and dried to get rid of the tannies materials and make the Khalal suitable for consumption and storage. Actually, what is produced in this method is about ten thousand tons annually in Iraq, Oman and Saudi Arabia. Since the beginning

of this century packing Iraqi dates industry in Iraq has developed using modern packing machines and suitable packing materials. In Iraq, there now exists ten modern complexes for date processing and packing. Large quantities of improved dates exceeding 75 thousand tons annually are exported to most high living standard markets, as well as more than 150 thousand tons are exported in cheap packs to the poor markets in Asia and Africa.

Iraq is considered the biggest date packing country in the world. About 50% of the world market fancy packed dates are prepared inside plastic, carton and wooden packs of various shapes and weights.

According to the development level in this industry, we can divide the producing and exporting countries into three groups:

- 1 - Countries having developed packing industry, such as Iraq, Iran, Algeria, Tunisia, France and U.S.A. These countries supply the world market with its need of dates which reaches about 15-20% of the world production.
- 2 - Countries not having modern packing houses and suitable stores and where dates are still packed manually in primitive packages; dates are infested and damaged during handling package storage. Among these countries are Somal, Chad, Yemen and Moritania.
- 3 - Countries who started lately to establish modern projects for date packing industry, but and for several reasons still need development. Among these are Sudan, Egypt, Oman, Morocco, Saudi Arabia, Libya and Pakistan.

Inspite of the fact that 95% of the world production undergoes pressing and packing for different purposes, the volume of dates packed in improved and attractive packages for export is very small and does not exceed 140 thousand

tons annually, from 10 commercial varieties which represent 6.5% of the world production. As for remaining quantities they are packed in ordinary packages. Below are the main modern packing factories in the world:

- Iraq: 10 modern complexes in Baghdad, Basrah, Karbala, Shamiyah, Bakoba and Hilla.
- Algeria: 7 modern packing houses in Biskara, Tolga, Algima'a, Togort, Wirgala, Elwad and Maris.
- Tunisia: One modern packing factory in Tunis.
- Morocco: One modern factory in Rashidyah; another under construction in Zagora.
- Libya: One factory under construction in Al-hon.
- Sudan: An old factory in Krema.
- Egypt: 5 modern factories in Elwadi Algadid and Oasis.
- Oman: 2 modern factories in Nizwa and Rostaq.
- Saudi Arabia: 3 modern factories in Elmadina, Almonawarah and in the Eastern Region (Alhassa and Al-Katif).
- D. Yemen: One factory under construction in Hadharmot Valley-Seiyoun.
- Iran: 5 modern factories in Al-Ahwaz and other southern areas of the country.
- Pakistan: 2 modern factories in Turbet and Khairpur.
- Canada and USA: 7 modern factories in Toronto, Chicago, Atlanta and California.
- France and UK: 7 modern factories in Marseille and London.

B - Date Products Industry

Several food industries using dates as raw materials were established a long time ago in Iraq and the neighbouring countries. Their products were used for human consumption and animal fodder. This industry has grown and developed in the countries where production of dates were greater than the local consumption and export. Iraq was and still is the leading country with regards to the rate of development of date products industry especially

during the period that followed World War II.

Actually, there are industrial projects for date products in several countries of the world which were established during the past 25 years. Studies are still going on to establish new projects and this could be seen in the following table.

Table (9)

Date Products Industrial Projects in the World

Country	No. of Projects	Type of Product
Iraq	7	Ethyl alcohol and alcoholic drinks, liquid sugar, tortilla (vegetable protein), vinegar, date syrup (concentrate date juice), fodder.
Sudan	2	Ethyl alcohol and alcoholic drinks, fodder.
Libya	2	Date syrup, fodder.
Iran	2	Date syrup, fodder.
Algeria	1	Liquid sugar (under consideration).
D. Yemen	1	Ethyl alcohol and alcoholic drinks (under consideration).

From the above table, it is clearly noticed that, date industry in Iraq is well advanced with regards to the number of existing projects as well as the diversification of their products.

C - Date Products Industry in Iraq

The Ministry of Industry in Baghdad, in co-operation with Iraqi Dates Organization, and Palm and Dates Research Centre of the Foundation for Scientific Research and other organizations,

have studied the existing situation of dates production and exportation and drawn-up an integrated plan to manufacture new products from the surplus of dates available. The Ministry of Industry tends to increase the economic and nutritional value of dates for the benefits of different social sectors. The Date Industrialization Plan was successfully implemented after the 17-30 July 1968 Revolution. It has taken into consideration the importance of increasing the export of improved packed dates for it gives high returns and to reduce the volume of ordinary packed dates exported as fodder for it gives a return which do not exceed the production costs and is sometimes even lower than that.

The Zahdi dates production is about 250 thousand tons annually and constitute about 66% of the total production of Iraqi dates. This variety is the main raw material which the manufacturing plan is based upon. After evaluating the dates export and the possibility of developing it in the world market, it was decided to fix the amount of Zahdi in the industrialization plant to 180 thousand tons annually, i.e., 65% of the total annual production of Zahdi. Moreover, about 40 thousand tons of Zahdi production is used annually to produce date syrup and ethyl alcohol. The alcohol is needed by the local market for alcoholic drinks industry and medical purposes.

Expansive programs are being laid to establish several projects for date industries. The production capacity and type of product of each project are set according to the following factors:

- 1 - Dates contain about 60% of its weight sugar material (glucose and fructose).
- 2 - Iraqi needs of these products according to their nutritional and economic priority in the scope of the national development plan.

- 3 - The availability of modern technology which facilitates the manufacturing of these products and to benefit from various studies and experiences gained in Iraq and other parts of the world in the field of date products industries.
- 4 - Taking into consideration the annual average increase of population in Iraq which is about 3.3% as well as the average increase in the annual personal income and the expected changes in the mode of consumption due to the rise in living standard and the continuous implementation of the programs of national development.

The following table names the projects included in the date industrialization plan:

Table (10)

Date Industry Projects in Iraq

Name	Volume of Dates Consumed Annually/Ton	Annual Productive Capacity	Notes
1-Liquid sugar in Hindyah	48000	30000 tons	Under construction
2-Natural vinegar in Numanyah	2000	5 million litre	Producing
3-Alcoholic drinks in Khalis	7000	2 million litre	Producing
4-Tortilla in Souk Al-Sheyok	18000	5000 tons	Under construction
5-Date syrup in Kerbala	7000	5000 tons	Producing
6-Citori acid and tortilla in Kiffil	100000	28000 tons tortilla and 2500 tons lemon acid	Under consideration

The total cost of the above-mentioned projects is 54 million dollars. Below is an explanation of the nature of these projects:

Liquid Sugar from Dates Project

It is designed to produce 30 thousand tons of liquid sugar annually. It is considered among the important projects, for liquid sugar is expected to substitute gradually glucose and sucrose sugar used in soft drink, pastry, sweets and ice cream industries.

This project utilize the high percentage of sugar in dates after extraction and getting rid of the non-sugar materials such as protein, salts, color materials. This is possible by using chemicals and ion exchangers. Then to evaporate the pure sugar solution under vacuum in order to get liquid sugar of the following specification:

Purity	99.4%
Total soluble materials	72 %
Total sugar	71.5%
Ashes	0.05%
Odourless	
Taste: Natural taste of invert sugar	
Colour: Colourless to faint yellow	

Date Vinegar Project

Date vinegar is an old and well known house industry in Iraq. The present project depends upon the best technical methods of sugar fermentation to alcohol and to oxidize it to acetic acid. The project is designed to produce 5 million litres of vinegar, i.e., about 10 million bottles per year with

the following specifications:

Acetic acid	4 - 5 %
Dissolved solid materials (other than vinegar)	1 - 2 %
Ash	0.2 - 0.5%

Color: Clear yellow or brown according to fresh date color.

Odour: Natural vinegar odour.

Vinegar is consumed in pickle industries, etc.

Date Alcoholic Products Project

Alcohol industry is not new in Iraq. More than 25 years ago, two big factories were established in Baghdad to produce ethyl alcohol alcoholic drinks (two arak marks are Zahlawi and Mastaki). Furthermore, industrial alcohol and denatured alcohol is also produced.

The new project for alcoholic drinks in Khalis has an advantage over the previous projects in its ability to produce drinks other than arak such as gin, whisky, vodka and others.

The production capacity of this project is about 2 million litres of ethyl alcohol with 95% concentration with the following specifications:

Ethyl alcohol	95 - 96 %
Residue after evaporation	10 mg./litre maximum
Esters	100 mg./litre maximum
Permanganate exchange	30 minutes
Color	None
Odour and taste	Natural

Protein Yeast Project (Tortilla)

This project is among the new ones and depend on transforming date sugar to protein through some yeasts. Vegetable protein is consumed essentially in poultry nutrition (for egg or meat hens).

The designed production capacity of this project is 5 thousand tons of protein annually with the following specifications:

Solid materials	92%
Proteins	48%
Phosphorus penta oxide (P_2O_5)	2.5%
Ash	10%
Color	Brown

Improved Date Syrup Project (Date Honey)

The designed production capacity of this project is 5000 tons of date syrup annually. It is used in sweet and pastry industry, as well as for direct consumption. It is also an export commodity, the production process which includes preparation of the raw juice which is then concentrated under vacuum and filled in glass or metallic cans of different weights. The specifications of date syrup are as follows:

Total soluble materials	73-75%
Water	25-27%
Sugars	66-69%
Mineral ash	1-1.5%
PH	4.8-5%
Color	Clear brown
Taste and odour	Natural

With regards to the project of citric acid from dates which depend on sugar transformation by micro-organism *espergillus* to citric acid which is widely used in food industries, this project is still under consideration to be sure that citric acid production from dates is economically more feasible than from molasses by-product obtained from cane and beet sugar factories in Iraq.

What has been mentioned before shows, that date processing programmes which are planned and implemented after the 17-30 July 1968 Revolution by the Ministry of Industry, have absorbed 80 thousand tons of Zahdi dates annually, along with 40 thousand tons consumed annually by the other alcohol and date syrup projects which were already existing in Iraq.

Although the implemented projects mentioned above do not actually consume all Zahdi dates planned to be processed, they are considered an important achievement in the field of dates industry within the frame of food industry strategy of the country. This industry will participate in producing the derivatives needed in the local market and to save foreign currencies which is drained annually by importing similar products. The implementation of these projects mean an active participation in solving the problem of date crop surplus especially during high production seasons and the problems of crop storage and monetary losses to Iraqi Dates Organization.

There is a large possibility to absorb more quantity of the Zahdi dates which is actually exported at low prices to the weak purchase power markets. These could be introduced in the field of citric acid, liquid sugar, vegetable protein alcohol, vinegar and other projects, after completion of the economic feasibility studies in comparison to using the molasses of the sugar cane and beet factories, in view of

the increasing prices of raw dates. There are also other suggested project researches which are not completed yet, such as dried sugar, as well as fructose and glucose for both medical and nutritional use.

The Iraqi Palm and Date Research Centre is implementing a pilot plant project for date products which include the production of dried sugar, fructose and glucose on a semi-industrial scale as well as for carrying out experiments to improve the technology for producing vegetable protein, liquid sugar and other products.

The total production of the date products factories do not cover the local demand except for date syrup which is exported. The current rise in living standard in Iraq will increase the demand on date products. For example, Iraqi annual need of vinegar is estimated at about 20 million litres which is 3 times the production capacity of the Nomanyah vinegar factory, the production of Souk Al-Sheyouk factory of vegetable protein (Tortilla) will not cover more than 6% of the total annual demand estimated for 1980. The imports of Iraq from different sorts of sugar (raw sugar white crystalline, glucose syrup) is about 400 thousand tons annually. The average annual consumption per capita is about 30 kg. which is a high figure compared to other developing countries. The sugar quantity consumed in soft drinks, sweet, pastry and ice cream industry is estimated to be about 60 thousand tons annually which could be substituted gradually by liquid sugar from dates. The factory which is under construction is designed to produce 30 thousand tons of liquid per year.

As for the citric acid project, whose final feasibility studies are not yet completed, the smallest economic production unit could produce 2500 tons per year as indicated by scientific information.

The annual local consumption of citric acid is about 850 tons. Here, the case differs from other date products for it is essential to find an external market to absorb the surplus of production. The Arab common market may help in marketing the surplus quantity of the citric acid.

In the light of the present wide development in dates industries, it is recommended to expand the production of vegetable protein (Tortilla) not from dates but from the sugar cane and beet molasses which is available at low prices in the sugar factories of Missan, Sulaimanyah and the expected new sugar projects which will be realized in the future. As for the projects of liquid and dried sugar, glucose and fructose from dates, it is recommended to wait until the technical and economic problems facing them are solved, after considering the great development in the production of glucose syrup from corn and the experiments on transforming glucose to fructose which is sweeter, thus, leading to the new competition with liquid sugar from dates.

The present successful realization of Iraqi Dates Industrialization Plan will help the Date Organization in concentrating its efforts on exporting the remaining quantities of date crop of high quality and commercially viable at higher prices which will benefit the date producers and the whole economy of the country. This has been a major objective of the economic development plans in Iraq. It is worthwhile to mention that, the efforts of the Ministry of Industry, not only in the field of dates industry, but also in processing cellulose and residues of palm trees, has to establish the project of fiberboard from palm trees fronds in Abi-Schair.

Through the establishment of these date projects, the Ministry of Industry has participated actively in the rational utilization of dates and palms wealth in Iraq.

