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ECONOMIC FEATURES LIMITED

5 FEB 1969

**AGRIBUSINESS ORIENTATION TO IRAN  
AND THE DEZ IRRIGATION PROJECT**

**AGRIBUSINESS BULLETIN**

**4**

**DEVELOPMENT AND RESOURCES CORPORATION**





TURKEY

U. S. S. R.

CASPIAN  
SEA

○ TEHRAN

PROJECT AREA

ANDIMESHK

IRAN

Dez River

IRAQ

AFGHANISTAN

KUWAIT

PERSIAN  
GULF

PAKISTAN

SAUDI  
ARABIA

OMAN

LOCATION OF DEZ  
IRRIGATION PROJECT IN  
KHUZESTAN PROVINCE, IRAN

ARABIAN  
SEA

*Iran extends an invitation to agribusiness and farm operators to investigate the opportunity for agriculturally related ventures, particularly in the 250,000-acre Dez Irrigation Project, located in Khuzestan Province. Natural and physical resources of the project are splendidly adapted to agricultural development. In Iran, growth has been achieved in an environment of political and economic stability. The Government of Iran is firmly committed to private-enterprise development of agriculture.*



*Fourth in a series of agribusiness bulletins published by Development and Resources Corporation for the information of prospective private participants in the development of agriculture and agriculturally related industry abroad.*

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*Increasing world food production, particularly in the developing countries, is an international issue of mounting concern and corresponding opportunities. The Government of Iran, supported by many private enterprises, is actively interested in expanding the quantity and quality of food, primarily through improved utilization of irrigated land and modern technology.*

As the first step in a program to encourage the development of private agricultural enterprise, fourteen agribusiness leaders from the United States visited the country at the invitation of the Government of Iran early in 1968 to investigate the investment opportunities for private large-scale intensive farming and related agro-industrial ventures.<sup>1</sup>

*Much of the acreage of the Dez Irrigation Project will be available on long-term leases to approved and qualified investors. Improvement of the lands of Khuzestan Province was initiated more than a decade ago by the Government with the assistance of Development and Resources Corporation of New York as general consultant. The infrastructure within the project has been developed to a level where opportunities exist for private enterprise.*

The agribusiness leaders and other independent investors who have investigated Iran have indicated their conclusion that favorable investment climate exists in terms of political, economic, and financial stability coupled with government cooperation, attractive potential returns on investment and excellent natural resources.

## GEOGRAPHY

Iran (often referred to as Persia) is a land bridge between East and West. Iran's borders touch Iraq and Turkey on the west, the U.S.S.R. on the north, and Afghanistan and Pakistan on the east. On the south it faces the Persian Gulf and the Gulf of Oman.

*The country has a population of more than 25 million; occupies a land area slightly smaller than Mexico, and about the combined size of Nevada, New Mexico, Utah, Colorado, Arizona and Wyoming.*

Topographically, Iran is primarily made up of plateaus and high valleys ranging in altitude from 1,000 to over 6,000 feet. The Dez Irrigation Project is in southwestern Iran and has a climate similar to the desert areas in the southwestern United States.

Outside the mountain fringes of the lofty Zagros and Elburz mountain ranges on the west and north, are two distinct physiographic zones, the Caspian Seacoast, and the Khuzestan and the gulf coasts.

*Moderate temperature and natural rainfall (up to 60 inches annually) have historically established the Caspian as the primary source of agricultural production.*

<sup>1</sup>Appendix A provides a listing of the names and addresses of each tour participant. Appendix B is a list of names and addresses of Iranian governmental and industrial leaders who met with the group and expressed interest in agribusiness.

*The Mohammad Reza Shah Pahlavi Dam. This keystone in the development of Khuzestan Province impounds water for the Dez Irrigation Project.*

The area surrounding the Persian Gulf is to 120°F. in the summer, and the winters are mild. The basins of five rivers in the Khuzestan region, offer there a variety of irrigated agriculture opportunities found in the Imperial Valley of California.

*On the Dez, one of the five rivers of Khuzestan, the Shah Pahlavi Dam was completed in 1963. The dam impounds water for the 250,000-acre Dez Irrigation on the upper Khuzestan plain.*

## GOVERNMENT

The political stability which has evolved in Iran, despite political unrest in some areas of the Middle East, has followed an independent course, maintaining neutrality in the Middle East, trading freely with the United States, Europe and other Iran's commercial partners have been important sources of technical assistance, and capital investment.

Since 1906, when a constitutional monarchy was established, institutions, tailored and adapted to Persian culture, have been developed. The Shah-in-Shah, His Imperial Majesty Mohammad Reza Pahlavi appoints a Council of Ministers which is responsible to the Majlis (Legislative Assembly) and the Senate. Through progressive leadership, reforms, popularly called the White Revolution, are being brought about in most aspects of Iranian life: electoral reform, and elimination of illiteracy are among the list of government achievements.

*The stability enjoyed in Iran has led to rapid economic growth and to the attraction of foreign investment. The visit of the President of the United States afforded an opportunity to discuss government policies and to have frank exchanges. During the meetings, key Ministers expressed a "new spirit" which has forged ahead in Iran. It was evident that a relatively young group of Iranian leaders clearly understand the policies which have been adopted in a series of five year development plans.*

Iran has enjoyed an average annual growth rate of 10 percent during the Third Plan which drew to a close in March 1973. Gross National Product (GNP) will be at least 50 percent higher in prices according to Iranian estimates for this year. During the Third Plan (1968-1973) the Government has adopted a target annual growth of nine percent.

*During the Third Plan, the industrial sector grew from eleven to twelve percent, but agricultural growth was an average growth below three percent. "This is why we invite you to visit Iran and meet with us," commented Rouhani, Minister of Water and Power, to the President. "Iran is to continue to grow at one of the world's fastest rates. The agricultural sector must grow at a much faster rate than in the past."*

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Rouhani, and gov-  
ernment officials.*





On February 7, 1968, the Prime Minister, His Excellency Amir-Abbas Hoveida, presented the Fourth Plan to the Majlis; a Plan which places particular emphasis on the agricultural sector. The Government of Iran has repeatedly emphasized the important role private enterprise can and should play in agriculture. In the Fourth Plan, 25 percent of the land allocated to mechanized commercial farming operations is in the Dez Irrigation Project.

*The Plan will be financed primarily through oil revenues that are expected to increase 25 percent annually. The combination of political and monetary stability has given Iran an enviable reputation in international financial circles. For example, the IBRD (World Bank) mainly financed the construction of Pahlavi Dam and recently loaned \$22 million to finance a new irrigation system in the Ghazvin Plain near Tehran.*

## FINANCE

Iran's record of monetary stability, in a rapidly expanding economy, is shown in an average annual increase in the cost of living of only one percent, coupled with a satisfactory balance of payments. This performance is hard to match anywhere in the world.

During the agribusiness tour, Dr. Jamal Haddad, Director of the Center for the Attraction and Protection of Foreign Investments of the Bank Markazi, stated, "Our laws to encourage foreign investment are most liberal. Private investment is acceptable in industry, mining and agriculture, but proposals must contribute to our economic development. Some submitted proposals cleared all red tape obstacles in only a week's time and many in four to five weeks."

*Joint ventures with Iranian partners are particularly welcome and the Government has made special provisions for foreign investment under the Law for the Attraction and Protection of Foreign Capital, 1955.*

More than 28 American companies now operating in Iran have taken advantage of the investment opportunities offered and to date, these investments total \$120 million. Other large companies are entering Iran. Products produced locally by B. F. Goodrich, Colgate, Pfizer, Esso, Parke Davis and others are available for purchase in Tehran, Abadan, Isfahan, Shiraz and other population centers.

*A well developed and organized central and commercial banking system exists. Importation of foreign exchange is free and there is no restriction on the remittance of current profits to the country in which the investment originated. The initial investment and reinvested profits may be repatriated at any time. A variety of tax concessions are available including a five year tax holiday on enterprises established outside a radius of 60 kilometers from Tehran. The Iranian banking system provides the potential investor with a wide variety of equity and long term capital sources.*



## *Industrial and Mining Development Bank (IMDBI)*

Chase International Investment Corporation and Lazard Freres in 1959 helped to establish the Industrial and Mining Development Bank with a fully paid share capital of \$5.3 million. Forty percent of the capital was subscribed by 20 institutions in the United States, United Kingdom, France, Germany, Italy, Netherlands and Belgium and 60 percent was subscribed by the Iranian public of which IMDBI had over 1600 shareholders. Early in 1966, foreign shareholders sold half of their holdings to the Iranian public who now hold 80 percent of the total shares of the bank. The remaining 20 percent is still held by the foreign group. The prime objective of this was to create a private institution capable of promoting and financing the establishment, expansion, and modernization of private enterprise undertakings. Today the IMDBI has access to \$110 million and has instituted plans to expand through additional advances in capital from the World Bank (IBRD).

*The IMDBI makes debt and equity investments in sound ventures, and when required, conducts feasibility studies. Currently this institution has 23 loans in metal product companies, ten in cotton textile companies, 23 in food processing concerns, and six in sugar beet mills. The total outstanding loans add up to over 200. These loans average from five to seven years in length.*

Concurrently, the IMDBI maintains an active program to encourage investment in industries which experience shows to be needed in Iran and which will prove profitable. Governor A. Keradjou of IMDBI, gave an example of this program to the agribusiness leaders by stating: "We have been instrumental in the formation of a corporation to manufacture paper from bagasse, a by-product of the cane sugar mill operating in Khuzestan. At present, bagasse is a waste product and is burned. This new paper venture will utilize a wasted resource and also reduce foreign exchange requirements for this product."

IMDBI plays an important role in the industrial development and, as a consequence, has assembled a wealth of information of value to the potential investor. The Governor briefly summarized problems encountered by the investor, "All too often foreign investors do not do their homework and take too much for granted. Administration and personnel problems are often neglected until it is too late to correct them properly. About 80 percent of the complaints heard are about matters that careful preparation would have revealed. As a general rule, industry is easier to develop than agriculture. Industrial growth has been down in some cases by the failure of agriculture to keep pace, notably in food industries. At present very little processed food is utilized in Iran."

*IMDBI provides a link between foreign and Iranian investors. The Bank has taken a minor equity position in several ventures to prevent domination by either foreign or national stockholders. As an example, the Ministry of Water and Power holds a 45 percent share, with another 45 percent held by a German firm in a transformer manufacturing venture. IMDBI holds an important minority ten percent participation.*

### *Agricultural Development Fund*

With encouragement from the Central Bank, a new source of long-term financing for agriculture is being formed. The primary purpose of the Agricultural Development Fund is to supply capital to large-scale agricultural projects. The Fund's initial capital has been set at \$13 million, but injection up to \$200 million is scheduled after the Fund opens for business in October, 1968.

The President of the Agricultural Development Fund, Dr. Ameri, who was formerly with the Bank Markazi, will be empowered to make equity investments and to conduct and finance feasibility studies on large-scale farming ventures.

### *Agricultural Bank of Iran*

*The Agricultural Bank maintains 157 branch offices and has a capital of \$130 million. The primary function of this Bank is to finance small land owners through short-term (one to two year) loans. These loans are channeled through cooperative institutions in the form of annual crop loans. The resources of this Bank would be important to a processor interested in production contracts with small farmers. The average short-term crop loan, with a third person guarantee, financed by the Agricultural Bank of Iran is \$1,300.*

A good example of the activities of the Agricultural Bank is the role played in the development of the sugar beet industry. Through the Bank's cooperation, beet mills give credit and extension help to small farmers. Primarily through the efforts of small farmers, sugar beet production in Iran has doubled in the past five years to 800,000 tons.

### *Iranian Investment Corporation*

Members of the Iranian Oil Consortium has formed a private investment corporation. The Iranian Investment Corporation controls a capital of \$5.5 million and is interested in participating in equity capital of joint-stock companies formed to operate industrial or agricultural ventures of small and medium sizes in the private sector.

*Additionally, large commercial banks in Iran are interested in providing capital to agribusiness. A list of the names and address of interested commercial banks is in Appendix C.*

## INDUSTRY

The petroleum industry in Iran. American firms are directly involved. Opportunities are present for investment.

Engineer Khalil Taleghani, a rich subsidiary in Iran, and other business leaders. He was encouraged to venture and pleased with the results of entrepreneurs.

*Mr. H. Sabat, Chairman of the Board of a known Iranian industrial company, expressed the desire of Iran to encourage foreign investment on a "first come, first served" basis.*

Current industrial activity includes the Chemical Company in which the Petrochemical Company is under construction. In 1969, when completed, it will produce a variety of nitrogenous fertilizers. Imported phosphate rock is used in the production of fertilizers.



*Credits from the Soviet Union are being used to build a cotton mill near Isfahan with an investment of \$10 million. The mill is to be expanded eventually to 200,000 spindles.*

Articles of association for the joint ventures of Iran and Pakistan (Iran is holding 25 percent interest) for a company which will construct a textile mill.

*Proctor and Gamble is producing laundry soaps in a joint venture with Iran.*

Recently the Oil See has begun the production of oil seed. The oils are domestically utilized. Cotton seed, is processed in Iran. In a few years Iran will be consuming 1 million additional acres of land.

*Sugar beet and vegetable oil production is increasing rapidly. Cotton milling has also expanded.*

The Iran Chamber of Commerce and Industry. Senator Taher Ziaii, encouraged the formation of a group of Iranian industrialists. A book which lists all members of the group is available.

country has been highly developed and at least 26  
y or indirectly involved in it. Diverse opportu-  
ment in extractive and manufacturing industries.  
hani, Chairman of the Board of the B. F. Good-  
discussed experiences in industry with the agri-  
enthusiastic regarding the successfully established  
the relationships he had with American entre-

*man of the General Rubber Company, a well  
leader, joined Mr. Taleghani in emphasizing the  
age foreign investment, but added that it will  
served" invitation.*

activity in Iran is brisk. The \$170 million Shapur  
ch Allied Chemical Corporation and the National  
(Iranian) have equal shares, is presently under  
en Shapur goes on stream, the large plant will  
ogen fertilizers from abundant natural gas and

*met Union will be used to build a large steel  
initial capacity of 600,000 metric tons which can  
2,400,000 metric tons.*

ere signed in December, 1967 by the Govern-  
an and the Reynolds Aluminum Company (hold-  
or the formation of the Iranian Aluminum Com-  
a \$45 million aluminum plant near Ahwaz.

*recently commenced manufacturing toilet and  
venture with Pars, a large Iranian industrial group.*  
d Research Corporation was formed to promote  
ls within Iran. Annually 115,000 tons of edible  
ed. Only one-third of this requirement, principally  
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ing the production of oil seeds from 500,000 ad-

*etable oil processing industries are developing  
e long been an established industry in Iran.*

f Industry and Mines, under the leadership of  
urages agribusiness investment through an active  
alists. The Chamber published a detailed hand-  
bers and provides information on the economy.



## AGRICULTURE

*Agriculture employs 61 percent of the population but contributes only 24 percent to the GNP of Iran. Approximately 40 percent of the 17 million acres under cultivation are irrigated, mainly by the ancient Persian system of ganats (underground water channels) or diversion by temporary brushwood weirs from streams or rivers. The Ministry of Water and Power has an ambitious program for developing irrigated agriculture of which the Dez Irrigation Project is the largest segment.*

Yields from land under cultivation are only fair, although improving. Wheat is Iran's main crop. Barley is the second and rice the third major cereal crop. Other principal crops are sugar beets, cotton, pulses, oil seeds, tea and tobacco. A wide variety of vegetables, melons and fruits are grown.



*The poultry industry has expanded in recent years with most of the growth concentrated near cities. Iran now has an estimated 27 to 30 million chickens and other poultry.*

Importance of animal husbandry in Iran is evident from estimates of a 40 million sheep and goat population, largely grazed in migratory flocks by tribal people. In addition to range livestock, there is a substantial village livestock industry dependent on purchased animal feeds. Over 60 percent of Iran's barley production is utilized as animal feed to support village and urban livestock programs. Even with such a large animal population, Iran imports large quantities of meat annually, primarily lamb, to relieve a scarcity of animal protein.

*Industrial activity in Iran is brisk and the agribusiness group visited the National Iranian Oil Corporation, a petrochemical complex at Abadan.*

*The primary agricultural imports to Iran are sugar, wheat and wheat flour, dairy products, edible oils, coffee and tea.*

*PROJECTED NATIONAL PRODUCTION LEVELS  
FOR SELECTED CROPS*

Crop	Target Rate of Increase Per Year	Target Production 1967	Projected Production 1977	Projected Production 1987
	%		(Thousands of Tons)	
Wheat	4.7	3,800	5,586	7,372
Barley	1.9	1,100	1,309	1,518
Rice	7.0	700	1,190	1,680
Citrus	6.8	160	269	378
Grapes	1.9	550	655	759
Vegetables & Melons	6.8	1,350	2,268	3,186
Cotton (lint)	5.7	125	196	268
Sugar	8.7	2,400	4,488	6,576
Oil Seeds (cotton, flax sesame)	6.6	302	501	701
Forage				
Crops	—	140	420	700





Source: Third Plan Frame, 1961



DEZ IRRIGATION PROJECT



**LEGEND**

-  Boundary of Irrigation Project
-  Boundary Pilot Area
-  Boundary Half Paper Sugarcane Production Area
-  River

SCALE 1:50,000  
1:50,000

IMPERIAL GOVERNMENT OF IRAN  
KHUZESTAN WATER AND POWER AUTHORITY  
**DEZ IRRIGATION PROJECT  
SERVICE AREA WATER  
DELIVERY DATES**  
DEVELOPMENT & RESOURCES CORP. NEW YORK



The snow cover of the Zagros and Bakhtiari Mountains feed the five rivers flowing through the Khuzestan Plain. Annually, these rivers dump 35 billion cubic meters of water into the Persian Gulf. The Pahlavi Dam stores the flood flows of the Dez River to water the lands of the Dez Irrigation Project.

Some 25 centuries ago, the Khuzestan was the wealthy center of a great civilization. Many thousands of now barren acres were under cultivation. Some irrigation canals built by captured Roman soldiers are still visible. Over the years, during periods of civil disorder, the canals were clogged with silt and the land largely reverted to desert.

*In 1956, Development and Resources Corporation of New York undertook initial surveys toward establishing the Khuzestan development project. These studies led to the construction of Pahlavi Dam, and the development of a sugar cane industry at Haft Tapeh. The Dez Irrigation Project is roughly 20 miles wide and 30 miles long. A 50,000-acre pilot irrigation project was initiated in 1963 upon completion of the Pahlavi Dam. The pilot area is under full year-round cultivation by some 2,000 farmers. A farm extension service has been developed.*

In 1962, after five years of crop experimental work within and outside the pilot area, the Safiabad Field Trial Farm was established. The main purpose of this research farm is to provide continuous testing and demonstration of crops, cropping patterns and management methods. Testing of new varieties, seed multiplication, livestock improvement and training programs are all components of the research program.



## Population

The total population of the Khuzestan is 2.5 million, of which 56 percent live in urban areas. The population of the project area, which includes Dezful, Andimeshk and Shush, is 173,888. Of this number, 105,381 reside in the town areas and 68,507 in the rural villages. The population of the larger provincials of Ahwaz, Abadan and Khorramshahr is 322,068, 339,121 and 156,323 respectively. There has been an annual growth rate of 2.8 percent in the Dezful area.

## Education

*There are 83 primary schools in the Dez Irrigation Project area, which have 137 teachers, and 5,333 pupils under 15 years of age.*

*Iran has several agricultural colleges. There is the Karadj Agricultural College near Tehran, the Tabriz Agricultural College and the Ahwaz Agricultural College near the Dez Irrigation Project. The college at Ahwaz, established in 1956, has more than 200 students studying all phases of agriculture in a four year curriculum.*

## *Communications*

Postal services, telephone and telegraph communications are available within the area.

## *Transportation*

*A modern asphalt highway from Khorramshahr, a deep water port, to Tehran traverses the western part of the project. The distances between Tehran and the project is 568 miles and from the project to the port city of Khorramshahr, 170 miles. The National Iranian Railroad goes through Andimeshk, which is 419 miles from Tehran.*

## *Climate*

The project area has a desert climate. Temperatures reach 115° to 122°F. but average between 90° and 92°F. in the summer months, but the spring and fall are relatively cool with average daily temperatures ranging from 60° to 75° F. Winters are mild, with only occasional frosts. Appendix D provides a summary of the weather data from 1961-1967 collected at Safiabad, in the center of the project. Additional records are available from Development and Resources Corporation.



## *Soil*

*The soils of the project are mainly alluvial with an average texture of silty, clay loam. Heavier soils are found in the southern end of the area. Sandy soils occupy a negligible part of the project. Most of the soils would be in Classes II and III. The whole terrain generally slopes from north to south with a drop of 65 feet at the Dezful hill-ridge. The average decrease in elevation is 325 feet over a distance of 37 miles. The Shush plain is the least sloping.*

The drainage conditions of the soils do not vary greatly. The permeability of the soils in the greater part of the project is slow to moderate. Alkalinity is very slight in the area. Soil maps, drainage studies and additional information are available from Development and Resources Corporation.



## *Water Quality*

The Dez River is Class II water, possessing medium salinity and low sodium hazard. Boron content is negligible and there is no residual calcium carbonate.

## *Land Preparation*

*Land leveling is proposed to be completed on the land which will receive a regulated flow from the irrigation and distribution system.*

Earthmoving quantities may range from less than 150 to more than 800 cubic yards per acre. The average will be something less than 350 yards per acre.

*The slope of the land varies from 0.8 to 1.0 percent in the extreme south. There is good lateral drainage to natural drainage channels.*

Irrigation methods most adaptable to the slopes are down slope irrigation for close growing crops, and cross slope irrigation for vegetables and row crops. Where applicable, the basin type level irrigation will be applied for efficiency and complete water control.

*Approximately 12,000 acres of good land of either shallow soils or roughly undulating or eroded lands will require sprinkle irrigation. These areas generally occur along the fringe of the traversing natural drainage channels.*

*Mild winters; ample water; silty, clay loam allow a wide diversity of agricultural crops.*



AGRICULTURAL COSTS

e



## LAND

*Indicated rents for unimproved land range between two to five percent of gross farm revenue.*

## WATER

The Khuzestan Water and Power Authority sets water rates. A rate estimate has been provided consisting of a base charge of \$12 per acre for the first 6,000 cubic meters (about five acre feet per annum), plus a minimal volume charge for usage above this level.

## CONSTRUCTION

*The cost of building varies considerably as to the type and kind of construction. The costs in Table 1 can be used for estimation purposes.*

TABLE 1

Reinforced concrete with air conditioning	\$7.40/sq. ft.
Steel construction with heating system	\$5.20-\$6.00/sq. ft.
Brick building (iron beam construction)	\$4.50/sq. ft.
Factory type (iron beam, brick)	\$3.00/sq. ft.
Factory type (iron beam galvanized sheet)	\$3.20/sq. ft.
Warehouse (grade I)	\$2.00/sq. ft.
Warehouse (grade II)	\$1.50/sq. ft.
House (modern facilities)	\$5.50-\$6.00/sq. ft.
House (low cost construction)	\$3.00-\$4.00/sq. ft.

## EQUIPMENT

*Farm equipment is available from dealers in Iran. It is possible under the "Law for Encouragement of Exports and Imports" passed in 1955, for machinery and raw materials required for an approved investment to be exempted from custom duties. Examples of farm equipment prices are listed in Table 2.*

TABLE 2

Opel, light Reckord	\$4,700
heavier model	6,000
Chevrolet, air conditioned	8,800
Trucks—2 tons	6,000
½ ton	2,400
Tractors, 80 h.p.	6,667
Combines, 12 ft.	8,000
Hay mowers, 7 ft.	800
Hay balers, P. T. O.	2,667
Disc, 10 ft.	2,000
Harrow, 10 ft.	335
Land plane, 40 ft., 10 ft. wide blade	5,333
Grain drill, 10 ft.	1,600
Sprayer, P. T. O.	535
Cultivator, 4 or 6 row	175

## Labor

*There is an ample supply of labor in the lower grades. Trained or skilled labor is available for certain types of work. Local industry has developed highly productive workers through good training programs.*

The general labor costs normally charged in the area are found in Table 3.

<u>Type of Laborer</u>	<u>Kind of Work</u>	<u>Cost per 8 Hour Day</u>
Skilled	Tire repairman	\$2.60
	Tractor driver	2.00
	Machinist, 2nd class	3.25
	Machinist, 1st class	5.00
	Welder, 2nd class	4.10
	Welder, 1st class	5.00
	Tree budding	2.50
	Irrigator	2.00
Unskilled	Weeding	1.00
	Thinning	1.00
	Cleaning ditches	0.75

## Fuel

*Gasoline costs approximately 30¢ per gallon, diesel fuel is 11¢ per gallon and lubricating oil is \$1.15 per gallon.*

## Electricity

For demands less than 40 kilowatts the monthly rate would be:

First	300 Kwh at	3.3¢ per Kwh
Next	700 Kwh at	2.7¢ per Kwh
Next	2,000 Kwh at	2.1¢ per Kwh
Over	3,000 Kwh at	1.6¢ per Kwh

*Minimum billing is \$1.33 plus \$1.33 per Kw in excess of 10 Kw per month. Such demand is to be based on the highest average load in kilowatts during any 30 consecutive minute period of the 12 months ending with the current month.*

For demands greater than 40 kilowatts, the monthly rate is:

First	25,000 Kwh at	1.2¢ per Kwh
Next	975,000 Kwh at	0.93¢ per Kwh
Over	1,000,000 Kwh at	0.67¢ per Kwh

*Energy rates would be reduced by 0.13¢ per Kwh for energy used in excess of 365 Kwh per Kw of billing demand.*

The demand charge is \$1.87 per Kw of billing demand per month.



## *Pesticides*

*Many of the insecticides and fungicides commonly used in America or Europe are available in Iran. Some herbicides are now available and permission to import others has been requested. If a new fungicide, insecticide or herbicide is required, permission to import it can be obtained after the Seed and Plant Institute has tested and approved the material. Representative costs of some chemicals used at the Safiabad research farm are found in Table 4.*

TABLE 4

Castrix (rat killer) (lb.)	\$0.44
Cuperavit Blue (lb.)	0.50
DDT 25% E.M. (qt.)	0.39
Diazinon, 20% E.M. (qt.)	3.17
Diptrex, 5% V.P. (lb.)	1.64
Dithane Z (lb.)	0.44
Endrin 19.5% E.M. (qt.)	1.40
Gusathion, 20% (qt.)	2.82
Kelthane (qt.)	1.90
Lindane, 25% (lb.)	0.73
Malathion, 57% E.M. (qt.)	2.20
Metasystox (qt.)	3.30
Perfekthion (qt.)	3.30
Phosdrin (qt.)	2.95
Polyram Combi (lb.)	0.60
Sevin 85% W.P. (lb.)	1.27
Tedion (qt.)	2.11
Teizen (qt.)	0.44
Tiodane (qt.)	2.95

## *Fertilizer*

*At the present time, fertilizers are provided either from imports or from a small fertilizer manufacturing plant near Shiraz. They are distributed through the Central Organization of Rural Cooperatives at a cost of \$5.60 per hundred pounds of urea, \$6.20 for triple super phosphate and \$5.80 for ammonium phosphate.*

*Natural gas is the key raw material for the production of chemical fertilizers and Iran possesses one of the world's greatest gas reserves.*

*Shapur Chemical Company, Ltd. is specifically concerned with the production of sulphur and chemical fertilizers from natural gas. When this plant is completed, it will be one of the largest and most modern petrochemical complexes in the world.*

It will produce from a combination of natural gas and imported phosphate rock, the following products:

- 1,000 tons of ammonia per day
- 1,500 tons of sulphur per day
- 500 tons of urea per day
- 1,300 tons of sulphuric acid per day
- 450 tons of phosphoric acid per day, and
- 380 tons of diammonium phosphate (DAP) or
- 450 tons of triple super phosphate (TSP) per day

### *Seed*

Currently a good local source of improved seed varieties is not available. A plan has been adopted by the Khuzestan Water and Power Authority to develop and supervise a program for increasing the seed of some field crops.

Seed may be imported after receiving approval from the Ministry of Agriculture.

### *Shipping*

*Shipping costs of one ton of wheat to Tehran from the project is \$16.20 plus a charge of \$1.26 for loading and unloading, stamp, application fee and insurance. Refrigerated products will require 50 percent increase above the regular shipping rates. Shipping rates by rail or truck are found in Table 5.*

TABLE 5

#### A. Via Truck

	<i>Crop</i>	<i>Cost per Ton</i>
Dezful to Tehran	Grains	\$12.80
Dezful to Tehran	Vegetables	16.00
Dezful to Ahwaz	Grains	2.67
Dezful to Ahwaz	Vegetables	4.00
Dezful to Khorramshahr	Grains	4.00
Dezful to Khorramshahr	Vegetables	8.00

#### B. Via Rail

<i>Class of Freight</i>	<i>Cents per Ton Mile</i>	<i>Representative Material</i>
1	3.8	wheat, barley
2	3.4	lumber
3	3.0	fresh meat, dry vegetables
4	2.6	fresh vegetables
5	2.2	hay (alfalfa, sudan)
6	1.8	mineral ore
7	1.4	firewood



AGRICULTURAL POTENTIAL

A wide variety of field crops, vegetables, and fruit crops can be adapted to this region. Some have been grown for centuries such as wheat and citrus, but only recently has an attempt been made to test the adaptability of a large number of crops and varieties. Experience to date has led to the general conclusion that crops adapted to the Imperial Valley of California could also be grown successfully in the Khuzestan. However, only by direct field trials can specific adaptability be conclusively tested. Such trials are currently in progress at the Safiabad Field Trial Farm near the center of the Dez Irrigation Project.

*The resources in the project provide the potential for a wide range of crop and animal husbandry operations. Commercial farm operators, utilizing large-scale, mechanized operations will be able significantly to improve yields and cultural practices over the traditional methods currently used and the small-scale experiments completed. The foreign investor must consider, when going into a farming activity, the need of provision for distribution and marketing. Marketing services are not well developed in Iran. The farm operator must concern himself with certain marketing functions normally left to others in the United States.*

## *Field Crops*

Experiments in field crop production have been stressed for a three-year term in the pilot area. Wheat is the principal winter crop; rice is grown during the summer. With the advent of a regulated flow of irrigation water, the planting of additional land became possible and production was increased two or three times. The use of fertilizer has been highly successful and most farmers have adopted the practice. Various field crops have been planted and confirmed results obtained. Some of the oil and forage crops will become increasingly important as markets are developed through agro-industries for agricultural raw materials.



## Grain Crops

*The new Mexican varieties of wheat appear to be well adapted to the area and produce a yield of two tons per acre. They also have the advantage of not lodging which is a serious problem with local varieties. Heavier rates of fertilizer can be used with the new varieties.*

*Improved varieties of rice may be well adapted to soils in the southern part of the project.*

Experiments are underway with sorghum, field corn and barley. Additional research work on new varieties is needed to determine the most favorable planting dates. Program studies are also needed on weed control, reduction of bird damage, and fertilizer trials. Barley is currently grown as an animal feed.

## Oil Crops

Sesame is grown on a commercial basis and has provided yields of 700 to 800 pounds per acre. Difficulties have been encountered, however, in harvesting because local varieties shatter when mature. Several non-shattering varieties have been tested but none so far have proved adaptable to the area.

*Indications are that safflower has considerable possibility as yields ranging from 1,040 to 2,713 pounds per acre have been recorded on field trials. Ute, Gila, N 10 and Pacific varieties have been tested.*

It is questionable whether sunflower can be successfully grown in Khuzestan although it has been very successful in other parts of Iran. Yields of 1,500 to 1,800 pounds per acre prove flax can be successfully grown.

*Peanuts appear to be very well adapted to the Khuzestan area and is currently grown as a food crop. The crop does not have any serious pests. Crop yields of 5,000 to 7,500 pounds per acre indicate that many varieties produce satisfactorily.*

Results of soybean tests conducted in 1967 were not impressive. The crop may have potential. It appears possible to plant some of the soybean varieties after wheat or barley and harvest a good second crop in the fall of the year. Additional soybean research is scheduled.





## *Other Field Crops*

*Blackeye beans are successfully grown in the area and average 800 to 2,000 pounds per acre. There has been a limited production of mung beans but yields range from 900 to 1,200 pounds per acre. The broadbean appears to be a good commercial crop when sold green during the spring. Growers generally average about five tons of beans in the pod which reduce to about one ton of dried beans per acre. A wide range of dry edible bean varieties offer potential.*

*Yields of 1,200 to 2,000 pounds per acre obtained in experimental crops indicate that chick peas may also be grown very successfully with no serious insect or disease problems.*

*Cotton has been successfully grown at the research farm. A commercial planting of 70 acres was made in one village in 1967. "Delta Pine" smooth leaf averaged 1.6-1.7 tons per acre in 1967. "Cockers" produced slightly less.*

*Kenaf has been grown both for fiber and seed. Yields of fiber have ranged from 550 to 2,200 pounds per acre. Seed yields have been approximately 350 pounds per acre.*

## *Forage Crops*

*Several of the forage crops are particularly well adapted to the Khuzestan area. With the anticipated increase in the importance of the livestock industry, the production of these crops could be greatly expanded.*

*Alfalfa grows well wherever it has been planted. This crop is not only highly desirable for forage, but would be a good rotation crop with grain, cultivated vegetables and seed crops. It is planned that one-fourth to one-third of the project will eventually be planted to alfalfa. "Moapa" is the principal variety planted so far. From eight to ten cuttings, a hay yield of five to six tons per acre was obtained. Dehydration of alfalfa offers interesting possibilities.*

*Sudan grass has been grown for pasture and for hay. This crop grows well and could be used as good summer forage.*

*Berseem clover has also proved satisfactory for winter forage production. It has been planted with oats and barley as well as sown alone. Many growers plant this in the fall in rice paddies after the harvest.*

*Sesame, a traditional crop in the Khuzestan, responds well to improved cultural practices.*



## Vegetable Crops

*The growing of vegetables is well suited to the area and there is a good winter market demand for these crops. Research indicates that most vegetables are well adapted when sown at the correct time. Fall and winter crops which have proved particularly successful are beans, asparagus, carrots, sweet corn, cabbage, cauliflower, peas, cucumber, eggplant, lettuce, onion, peppers, radishes, potatoes, spinach and tomatoes.*

Summer crops which show promise include beans, sweet corn, cucumbers, eggplant, tomatoes, cantaloupe, water melon, and other melons.

Carrots grow very well and can be placed on the market from the middle of October through the winter and early spring. The sweet corn crop is new to Iran. Both a spring and a fall crop of corn can be produced. The cucumber is of major importance and can be grown as a spring or fall crop, although some difficulty has been experienced with powdery mildew. The Iranian cucumber varieties have proved superior to American strains in field trials.

Lettuce is currently being grown on a small commercial scale in the area. In the past, the Cos or Romaine lettuce has been the principal type produced. This is still true in the Khuzestan, but in northern Iran the head-ling varieties are gaining in popularity.

Early varieties of onions have grown well on the research farm and there is good acceptance of this crop by both farmers and consumers.

## Fruit Crops

Citrus fruits have long been grown in village gardens. The minimum temperatures during the winter months have dropped to damaging levels, but no serious losses have been experienced. Some project areas, having good airflow, such as the Dezful bench, are expected to be well adapted to citrus.

Grapes can be grown very successfully in the area. The quality of the fruit is good and a yield of approximately two tons per acre may be expected during the fourth year as determined by experimental results at the research farm. Since the fruit grown in the Khuzestan matures ahead of the main grape producing areas, there should be an excellent market for the crop within Iran.

Limited trials on strawberries have established the fact that the area could produce a crop early in the year when the market value would be very high. It is possible to obtain ripe strawberries early in February. New varieties are being tested and a local grower is planting a small commercial acreage.

*Kenaf fiber is one of the many crops being tested at the Field Trial Farm for use in the Dez Irrigation Project.*

## *Livestock Production*



*Since Iran is importing several million pounds of meat annually, emphasis is being given by the Government to increase domestic production of livestock. The climate of the project is favorable for livestock as well as for forage crops and feed grains. Particularly important for early commercialization would be native sheep feeding operations. Feasibility studies on livestock feeding and the development of livestock feeding enterprises are available.*

*A modern meat packing plant for sheep and cattle with adequate chilling and freezing rooms is needed in connection with an anticipated large commercial feed lot program.*

As the population in the Khuzestan increases, it is anticipated there will be a need for a modern dairy plant in the area. Presently most milk and cream products such as butter, ice cream and canned milk, are either imported or shipped in from distant parts of Iran. With proper care, a dairy herd composed of Brown Swiss, Jersey or Holstein cattle can be successfully handled in the area.

*At the close of the recent agribusiness investors tour to Iran, the Minister of Water and Power concluded with these words:*

*“ . . . you have received an invitation to study the agribusiness opportunities carefully and to prepare a proposal which you feel is sound and to submit it for final negotiation. Accelerated agricultural development is a new area for all of us and consequently, there are no hard and fast rules to apply to a proposal. You have our assurance that any reasonable offer will be carefully studied.”*

## APPENDIX A

### AGRIBUSINESS TOUR PARTICIPANTS

#### Name and Address

Mr. Irving Goldfeder  
Retired Hunt Foods Executive  
400 South Hauser  
Apt 12-B  
Los Angeles, California 90036  
*Interest*  
Food processing and marketing

Mr. Frank Purcell  
Representative in Tehran  
International Basic Economy  
Corporation  
381 Ave Takhte Jamshid  
P.O. Box 730  
Tehran, Iran  
*Interest*  
Investments; housing, supermarkets,  
sugar, food processing, hybrid corn,  
silk production

Mr. Jonathan Tohey  
Technical Director  
Chase Manhattan Bank  
One Chase Manhattan Plaza  
New York, New York 10015  
*Interest*  
Investments

Dr. E. Reeve  
Vice President for Vegetable Research  
Campbell Soup Company  
375 Memorial Avenue  
Camden, New Jersey 08101  
*Interest*  
Food processing and marketing

#### Name and Address

Mr. David Milton  
Regional Vice President for the  
Middle East  
Ralston Purina  
Brussels Office  
391 Avenue Louise  
Brussels 5, Belgium  
*Interest*  
Food and grocery manufacturing, soy  
bean processing, tuna fish processing

Mr. J. H. Graflund  
Vice President  
Overseas Division  
Deere and Company  
John Deere Road  
Moline, Illinois 62165  
*Interest*  
Manufacturers of farm tractors, and  
implements

Mr. Peter Sprague  
President  
Food Technology Corporation  
19 Sutton Place  
New York, New York 10022  
*Interest*  
Investments, poultry, cold storage,  
refrigerated truck distribution

Mr. Lloyd J. Hughlett  
Vice President  
Ball Brothers—Food Technology, Inc.  
1509 South Macedonia Avenue  
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*Interest*  
Food processing containers, zinc  
products, nonferrous metals

Mr William D. Garin  
President

The Garin Company  
P.O. Drawer 1731  
Salinas, California

*Interest*

Grower and shipper of vegetables

Professor Henry B. Arthur  
Graduate School of Business  
Administration

Harvard University  
Soldiers Field  
Boston, Massachusetts

*Interest*

Maffett Professor of agriculture  
and business

Mr. Frank Soy  
Overman Operation Planning  
Worthington Pump  
Harrison, New Jersey 07029

*Interest*

Deep well pumps production, equip-  
ment for liquid and gas handling for  
conversion of energy into useful work,  
air conditioning

Mr Donald Weeden  
Weeden and Company  
25 Broad Street  
New York, New York 10004

*Interest*

Investments

Mr Grant L. Kuhn  
President  
Grant L. Kuhn and Company  
P.O. Box 5252  
Lansing, Michigan

*Interest*

Pulse production and marketing

Mr R Pearsall Helms  
Director  
Traders Geneva S. A.  
Case Postale 8  
1211 Geneva 12  
Switzerland

*Interest*

Grain distribution, marketing, and  
animal feeds



## APPENDIX B

IRANIAN LEADERS INTERESTED  
IN AGRIBUSINESS DEVELOPMENT

- H. E. Amir Abas Howida  
Prime Minister of Iran
- H. E. Soffi Adria  
Managing Director  
Plan Organization
- H. E. Dr. Kazamzadeh  
Deputy Prime Minister and Chief of  
Budget and Project of the Central  
Bureau Plan Organization
- H. E. Mansour Rouhani  
Minister of Water and Power  
Khayam Avenue  
Tehran, Iran
- H. E. A. Alikhani  
Minister of Economy  
Khayam Avenue  
Tehran, Iran
- H. E. Dr. Zahedi  
Minister of Agriculture  
Elizabeth Boulevard  
Tehran
- H. E. Mehdi Samii  
Governor  
Bank Markazi  
Tehran
- Dr. Khodadad Farmanfarmaian  
Deputy Governor  
Bank Markazi  
Tehran
- Dr. Jamal Haddad  
Director  
Center for the Attraction and  
Protection of Foreign Investments  
Bank Markazi  
Tehran
- H. E. A. Kheradjou  
Governor  
Industrial and Mining  
Development Bank of Iran  
Bahjat Abad Avenue  
Tehran
- D. A. Amin  
Deputy to Governor  
Industrial and Mining  
Development Bank of Iran  
Bahjat Abad Avenue  
Tehran
- H. E. Yousef Khoashkhi  
Governor  
Bank Mellii  
Ferdows Avenue  
Tehran
- H. E. Dr. T. Ziaii  
Director  
Chamber of Industry and Mines  
Takht-Jamshid Avenue  
Tehran
- H. E. Khosroshahi  
Chairman  
Chamber of Commerce  
Takht-Jamshid  
Tehran
- H. E. Dr. A. Ahmadi  
Deputy Minister  
Natural Resources  
Sohel Avenue  
Tehran
- Mr. M. Alizadeh  
Khuzestan Water and Power Authority  
12 Meikadeh Avenue  
Tehran
- Mr. Asghar Sherkat  
Chief of Sugar Cane Project  
c/o KWPA  
Tehran Office
- Mr. A. Ajdari  
Chief of Dec Irrigation Project  
c/o KWPA  
Tehran Office
- Mr. A. Bahitiri  
KWPA, Khorramshahr Region  
c/o KWPA  
Tehran Office
- H. E. Eng. K. Taleghani  
Chairman  
B. F. Goodrich  
Avenue Eisenhower  
Tehran
- Eng. A. Azod  
Vice President  
Iran Chamber of Industries and Mines  
and General Managing Director  
Abwuz Sugar Refining Company  
57, Takht-Jamshid Avenue  
Tehran
- Mr. J. Akhavan  
Vice President  
Iran Chamber of Industries and Mines  
Chairman  
Jesp and Rambler  
Avenue Ekbatan  
Tehran



Mr. M.  
Vice Pr  
Tehran  
Avenue  
Tehran

Dr. H.  
Vice Pr  
Tehran  
Avenue  
Tehran

Mr. H.  
Chairman  
General  
Avenue  
Tehran

Mr. A.  
Member  
Board of  
Iran Ch  
57, Ave  
Tehran

Eng. R.  
Chairman  
Eddle  
Avenue  
Tehran

Eng. S.  
Member  
Iran Ch  
57, Ave  
Tehran

Eng. J.  
Avenue  
Varzani  
Koyvan  
Tehran

Eng.  
North  
Avenue  
Tehran

Mr. M.  
Tehran  
Avenue  
Tehran

Mr. A.  
Tehran  
Avenue  
Tehran



Mr. M. Dehdashti  
Vice President  
Tehran Chamber of Commerce  
Avenue Takht Jamshid  
Tehran

Dr. H. Bonakdarpour  
Vice President  
Tehran Chamber of Commerce  
Avenue Takht Jamshid  
Tehran

Mr. H. Sabat  
Chairman  
General Rubber Company  
Avenue Eisenhower  
Tehran

Mr. A. Lajevardi  
Member  
Board of Directors  
Iran Chamber of Industries and Mines  
57, Avenue Takht Jamshid  
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Eng. R. Razmara  
Chairman  
Edible Oil Cultivation Company  
Avenue Takht Jamshid  
Tehran

Eng. S. Behbahani  
Member  
Iran Chamber of Industries and Mines  
57 Avenue Takht Jamshid  
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Eng. J. Sepahpour  
Avenue Bahar  
Varzandeh Street  
Keyvan Building  
Tehran

Eng. Khansari  
North Takht Jamshid  
Avenue Soheil  
Tehran

Mr. Motaman  
Tehran Chamber of Commerce  
Avenue Takht Jamshid  
Tehran

Mr. A. Jalilzadeh  
Tehran Chamber of Commerce  
Avenue Takht Jamshid  
Tehran



## APPENDIX C

### COMMERCIAL BANKS OF IRAN

H. E. R. Sadeghiani  
Governor  
Agricultural Bank of Iran  
Elizabeth Boulevard  
Tehran

Mr. A. Safatelian  
Governor  
Foreign Trade Bank  
Mokhbberdoleh Square  
Tehran

Dr. H. Ram  
Governor  
Omrin Bank  
Istanbul Avenue  
Tehran

H. E. Aholhassan Ehtehaj  
Governor  
Iranian's Bank  
Hufez Avenue  
Tehran

Mr. S. Vahabzadeh  
Governor  
Irano-Holland Bank  
Tehran

Mr. M. Laleh  
Governor  
Tehran Bank  
Pahlavi Avenue  
Tehran

Mr. M. Nikpoor  
Labor Welfare Bank  
Pahlavi Avenue  
Tehran

Mr. H. Sadralhefazi  
Governor  
Irano-Japan Bank  
Tehran

Mr. J. Sasan  
Governor  
Sepah Bank  
Sepah Avenue  
Tehran

## APPENDIX D

**CLIMATE OF THE DEZ  
IRRIGATION PROJECT AREA**

<i>Month</i>	<i>Average Monthly Temperature at Safabad (°F)</i>	<i>Precipitation Mean of Ten Stations in DIP (inches)</i>	<i>Relative Humidity at Safabad (percent)</i>
January	52.2	2.41	73
February	56.7	1.70	70
March	61.0	.90	62
April	69.0	1.14	56
May	81.6	.75	35
June	90.4	.00	24
July	92.8	.00	28
August	92.5	.00	32
September	84.6	.00	38
October	75.5	.06	47
November	64.0	1.38	60
December	54.7	1.57	72
Year	72.8	9.91	60

*Development and Resources Corporation*

Development and Resources Corporation has undertaken on behalf of its client, the Khuzestan Water and Power Authority (an agency of the Government of Iran), to assist in the development of an agribusiness program in the Khuzestan area of Iran. The program includes provision for participation by non-Iranian private agribusiness enterprises.

Companies or individuals interested in obtaining further information on opportunities for the development of agriculture and agriculturally related enterprises in Iran, or in discussing specific proposals for investment or other participation in this development, should write to:

John Oliver, President

DEVELOPMENT AND RESOURCES CORPORATION  
ONE WHITEHALL STREET  
NEW YORK, NEW YORK 10004

OR

William E. Warne, Vice President

DEVELOPMENT AND RESOURCES CORPORATION  
WESTERN OFFICE — 455 CAPITOL MALL  
SACRAMENTO, CALIFORNIA 95814



*Development and Resources Corporation is an independent consulting and operational services company founded in 1955 by David E. Lilienthal and the late Gordon R. Clapp, two former Chairmen of the Tennessee Valley Authority (TVA), and the investment banking house of Lazard Freres & Co., of New York. The company plans and carries out the development of natural resources in the United States and throughout the world on behalf of both public and private clients.*

