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الجمهورية اللبنانية  
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**MARKET PROSPECTS  
FOR OUT-OF-SEASON VEGETABLES  
IN ARAB COUNTRIES**

MINISTRY OF AGRICULTURE

GREEN PLAN

RURAL ECONOMICS RESEARCH CENTRE



MARKET PROSPECTS FOR OUT-OF-SEASON VEGETABLES  
IN ARAB COUNTRIES

by

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## I. INTRODUCTION

The Green Plan, realizing the need for the intensive out-of-season agricultural production in greenhouses in Lebanon (or rather controlled atmosphere houses), is embarking on a pilot demonstration project to encourage such type of intensive agriculture. A hydroponics controlled atmosphere house has already been built in the Hadeth area with the financial and technical assistance of UNDP. The Lebanese government has further allocated LL. 500,000 to the Green Plan, for the construction of different types of greenhouses in different regions in Lebanon.

These pilot greenhouses will demonstrate various types in various regions, methods of heating, propagation techniques, sowing and planting dates, soil improvement, soil sterilization, plant spacing, irrigation, fertilizer application, crop varieties, control of pests and diseases and other techniques.

The need for the out-of-season intensive agricultural production stems from several considerations. The first is its importance as a means of increasing foreign exchange earnings by import substitution and export promotion. The second is the stabilization of production and prices, and, therefore, making the products available to the consumer at reasonable prices around the year.

Furthermore, the expected large rise in the standard of living and the fast development of supermarkets in Lebanon and Arab countries, will result in a strong rising consumer demand for quality products that are well graded, packed and available all year round.

The Green Plan, in addition to demonstrating the optimum technical conditions necessary for successful greenhouse production, finds it also important to prepare studies on the domestic and export markets for greenhouse products. This present preliminary study is one of these studies. The domestic market situation is the subject of a separate study that is being prepared. The European market will also be examined in a separate study.

This is a preliminary study because of the lack of data, especially the seasonal data on production, trade and prices. Moreover, separate statistics on some of the vegetable commodities are not available as they are lumped together with those of other commodities. For example, trade statistics of cucumber, squash and the like are aggregated in one group. It is hoped that a more intensive study will be made in the future by actually visiting the various countries.

The countries covered in this study are Jordan, (as the major supplying country of out-of-season vegetables) Syria, Iraq, Saudi-Arabia and Kuwait. The commodities covered are tomatoes, cucumber, eggplant, string beans (green beans), sweet pepper and squash.

2. GENERAL PRODUCTION AND TRADE

2.1 TOMATOES

Table - 1 shows the volume of production, exports and imports of tomatoes in Jordan, Syria, Iraq, Saudi-Arabia and Kuwait from 1965 to 1970. All of these countries except Kuwait, which does not produce any tomatoes, are large producers of tomatoes.

The largest importing country is Iraq, which is also the largest producer. Imports of tomatoes into Iraq have ranged between 50,000 tons and 30,000 tons in recent years, indicating a large annual fluctuation. Iraq is followed by Syria whose imports have ranged between 10,000 and 25,000 tons, and then Kuwait whose imports have been at a level of about 15,000 tons. Saudi-Arabia is largely self-sufficient in tomatoes as its exports and imports are very small compared to its production. It is interesting to note also that the imports of tomatoes into Saudi-Arabia have decreased from about 3,000 tons in 1965 to less than 2,000 tons in 1970, whereas the exports have increased from 400 tons to 3,400 tons.

The major exporting Arab country of tomatoes is, by far, Jordan whose exports have ranged between 50 and 60 thousand tons in recent years. Syria is also an important exporter with exports ranging between 12 and 19 thousand tons.



TABLE - I

IMPORTS, PRODUCTION AND TRADE IN SOME ARAB  
COUNTRIES, 1965 - 1970  
(in thousand metric tons)

		1965	1966	1967	1968	1969	1970
Jordan -	Prod. (1)	189.0	145.0	150.0	127.0	150.0	137.0
	Exp.	40.3	94.0	50.6	62.1	48.3	54.0
	Imp.	0.5	1.2	0.5	0.2	-	-
Syria -	Prod.	135.0	126.0	162.0	164.0	192.0	192.0
	Exp.	7.6	13.4	15.6	14.9	16.4	11.7
	Imp.	10.3	30.7	17.9	12.5	9.7	25.2
Iraq -	Prod.	190.0	196.0	207.0	241.0	232.0	220.0
	Exp.	-	-	-	-	-	-
	Imp.	30.0	62.5	40.8	49.3	39.8	30.9
Saudi-Arabia							
	Prod.	82.0	106.0	100.0	100.0	100.0	100.0
	Exp.	-	0.4	1.3	0.8	2.0	3.4
	Imp.	3.1	4.2	3.7	3.9	2.9	1.6
Kuwait -	Imp.	6.7	11.1	13.1	14.5	12.6	...

(1) After 1967 includes only production of East Bank

(2) Data not available

SOURCES: FAO Production yearbook, 1970

2. Production and Trade Yearbooks of the respective countries.

## 2.2 EGGPLANTS

Table - 2 shows the available data on the volume of production and trade of eggplants. Eggplant is the second important vegetable crop after tomatoes ( compare with cucumbers and greenbeans in tables 3 & 4 respectively).

Jordan is the largest producer and practically the only important exporter of eggplants. Syria and Kuwait are the major importing countries. Syria has annually imported five to ten thousand tons in recent years, and Kuwait has imported about four thousand tons.

## 2.3 CUCUMBERS

Table - 3 shows the available data on the volume of production and trade of cucumbers. Iraq is, by far, the largest producer, but imports and exports negligible quantities. Syria is the second largest producer followed by Jordan.

Volume of trade in cucumbers is small. The largest importer is Kuwait (about 2,000 tons) followed by Jordan (about 1,500 tons). Syria is the largest exporter (about 3,000 tons) followed by Jordan (800 tons ). It should be pointed out, however, that the trade figures of Syria also include squash and the like.

## 2.4 GREEN BEANS (STRING BEANS)

Green beans, or rather string beans, are produced and traded in relatively very small quantities (refer to table - 4). Syria is the largest producer and exporter, followed by Jordan.

## 2.5 GREEN PEPPER

Separate data on sweet pepper is not available. The available data on green pepper (hot and sweet) are shown in table - 5. Jordan is the major exporting country while Kuwait and Syria are the major importing ones.

TABLE - 2  
EGGPLANTS, PRODUCTION AND TRADE IN SOME ARAB COUNTRIES  
 1965 - 1970  
 (in metric tons)

		1965	1966	1967	1968	1969	1970
Jordan -	Prod.	48,000	...	...	...	...	...
	Exp.	....	17,232	11,972	11,382	11,457	14,009
	Imp.	-	-	-	-	-	-
Syria -	Prod.	35,000 <sup>(3)</sup>	...	...	...	...	...
	Exp.	...	...	...	185	111	31
	Imp.	...	...	...	6,111	5,377	9,489
Iraq -	Prod.	...	...	...	...	...	...
	Exp.	...	...	...	249	-	786
	Imp.	...	...	...	...	...	11,...
Saudi-Arabia-	Prod.	7 <sup>(3)</sup>	...	...	...	...	...
	Exp.	...	...	...	..5	..4	0.5
	Imp.	...	...	...	186	216	200
Kuwait - Data not available. Exports to							
Kuwait from: <sup>(2)</sup>							
	Jordan				3,261	2,939	3,340
	Syria				78	27	...

(1) Data not available

(2) According to trade data of the exporting countries

(3) Average 1964 - 66

Sources:

- (1) Production and Trade Yearbooks of the respective countries
- (2) FAO Production Yearbook, 1970

TABLE - 3

CUCUMBERS, PRODUCTION AND TRADE IN SOME ARAB COUNTRIES  
1965 - 1970  
( in metric tons )

		1965	1966	1967	1968	1969	1970
Jordan -	(1) Prod.	25,000	40,000	28,000	6,000	4,000	6,000
	Exp.	3,200	1,200	600	800	800	1,000
	Imp.	-	-	900	700	1,400	1,300
Syria-	Prod.	43,000	45,000	64,000	69,000	74,000	51,000
	Exp. (2)	...(3)	...	...	3,300	2,600	3,000
	Imp. (2)	...	...	...	250	62	350
Iraq -	Prod.	93,000	102,000	140,000	116,000	122,000	130,000
	Exp.	-	-	-	-	660	-
	Imp.	-	-	-	-	-	-
Saudi-Arabia-	Prod.	6(5)	...	...	...	...	...
	Exp. (2)	...	...	...	70	900	120
	Imp. (2)	...	...	...	280	410	280
Kuwait -	Data not available. Exports to Kuwait						
	From: (4)						
	Saudi-Arabia					620	3
	Syria					800	800
	Jordan				740	780	700
	Lebanon				230	700	270

(1) After 1967 includes only production of West Bank

(2) Includes squash and the like

(3) Data not available

(4) According to trade data of the exporting countries.

(5) Average 1964 - 66

Sources: (1) Production and Trade Yearbooks of the respective countries  
(2) FAO Production Yearbook, 1970

TABLE - 4

GREEN BEANS, PRODUCTION AND TRADE IN SOME ARAB COUNTRIES

1965 - 1970

(in metric tons)

		1965	1966	1967	1968	1969	1970
Jordan -	Prod.	4,000	5,000	5,000	2,000	3,000	1,000
	Exp.	2,042	3,711	705	465	..(2)	687
	Imp.	-	-	-	-	-	286
Syria <sup>(1)</sup> -	Prod.	5,000	7,000	12,000	18,000	16,000	16,000
	Exp.	...	...	...	684	382	2,331
	Imp.	...	...	...	71	51	28
Iraq -	Prod.	3,000	4,000	4,000	4,000	5,000	5,000
	Exp.	...	...	...	34	-	-
	Imp.	-	-	-	-	-	-
Saudi-Arabia-	Prod.	2 <sup>(3)</sup>	...	...	...	...	...
	Exp.	...	...	...	....	...	...
	Imp. <sup>(1)</sup>	...	...	...	200	-	329
Kuwait	Data not available						

(1) Beans and green beans

(2) Data not available

(3) Average 1964 - 66

Sources:

=====

(1) Production and Trade Yearbooks of the respective countries.

(2) FAO Production Yearbook, 1970.

TABLE - 5

(2)  
GREEN PEPPER, PRODUCTION AND TRADE IN SOME ARAB COUNTRIES

1965 - 1970  
(in metric tons)

			1965	1966	1967	1968	1969	1970
Jordan	-	Prod.	8,000	...	...	...	...	...
		Exp.	...	1,789	1,512	1,194	1,403	1,730
		Imp.	-	-	-	-	-	-
Iraq	-	Prod.	10,603	10,261	11,715	10,994	19,801	10,511
		Exp.	...	...	...	249	...	238
		Imp.	...	...	...	...	...	...
Data for other countries not available								
Exports from Jordan to: (1)								
		Kuwait					572	962
		Syria					416	461
		Lebanon					152	202
		Saudi- Arabia					87	91
		Iraq					71	10

(1) According to trade statistics of Jordan

(2) Hot and sweet (separate data not available ).



### 3. SEASONAL PRODUCTION AND TRADE

#### 3.1 PRODUCTION

At present, Jordan is practically the only important supplier of vegetables during the winter season. Saudi-Arabia has been exporting some tomatoes, mainly during January, but only in the order of about 3,500 tons. Due to this special importance of Jordan, its seasonal production of the different vegetables is discussed below<sup>(1)</sup>. The Ghor area in the Jordan Valley, where the winter vegetables are produced, is a natural greenhouse in view of its location below sea level and, therefore, its high temperature.

##### 3.1.1. Tomatoes

For the winter season, planting of tomato seeds in the Ghor usually starts in June or July and lasts until October. This is followed by transplanting of seedlings from August or September until January. Because of the heat and intensive sunshine the early seedlings and transplantings must be done under shade. First harvestings can take place as early as November, but because of the difficult growing conditions and risks involved, the quantities are usually small. The overall harvesting season extends from November until the middle of May. The bulk of harvest extends from the middle of February until the middle of May.

The main tomato production season in Saudi-Arabia starts late in December and extends to some time in February.

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(1) Information on vegetable production in Jordan was obtained from:

Emmrich, C.O., "Possibility of Expanding the Fruit and vegetable Processing Industry in Jordan, Phase I Economic Aspects" Agricultural Marketing Centre, Amman, December, 1956.

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Jordan, therefore, is in a position of being a virtual monopoly supplier for part of November and December and again from February to April. After April the production season of the other Arab countries (except Kuwait which does not produce any tomatoes), which import tomatoes during winter, starts.

The main production areas in the Ghor are in Balqa District (lying between Dair Alla in the north, South Shownoh in the South, the mountains in the east and the Jordan river in the West) and the Karak District (around the Safi area at the south east edge of the Dead Sea). These two areas together account for about 80% of the total winter planted area. Other winter planted areas include the West Bank of the Jordan River in Nablus District, The Jericho area, the North Ghor in Ajloun District and Amman District.

Average yield of the winter season tomatoes in Jordan is about 13 tons per hectare. Average cost of production is about JD 130 per hectare. Average cost per kilogram, therefore, is about 10 fils.<sup>(1)</sup>

During recent years winter tomatoes in Jordan have accounted for 50-60% of the total annual production.

### 3.1.2 Cucumber

Locally grown cucumbers in Jordan are available on the market between March and December, with main harvests occurring during three periods of the year - during April and May from the Ghor; during June, July and August from the uplands and semi-coastal areas (the region west of Jerusalem, Ramallah, Nablus and Jenin); and during October and November again from the Ghor.

Most of the expansion has been in the summer production, while winter production has remained relatively constant. Average yield is about 7 tons per hectare.

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(1) One Jordanian Dinar = 1000 Fils



### 3.1.3 Green Beans

Most of the crop is produced in the Ghor area. It is available nearly all the year round, with the main harvesting period in the Ghor running from November to May and in the semi-coastal and upland areas from May until August.

Average yield is about 8 tons per hectare.

### 3.1.4 Green Pepper

About two-thirds of the Jordanian crop is produced in the Ghor. Green peppers are available the year round, with the main harvesting period in the Ghor extending between December and February-March, and in the uplands between the beginning of July and the end of September.

Yields average about 10 tons per hectare in the winter season and 7 tons per hectare in the summer season.

## 3.2 TRADE

Seasonal data on trade in vegetables are not available for most countries. However, some data on the exports of vegetables from Jordan, by country of destination, are available for the winter and spring season combined, for 1965/1966. These data are presented in Table - 6. As the seasonal pattern has not changed since 1966, and since Jordan is practically the only exporter during off season these data give a good idea of the proportion of vegetables that is imported during winter and spring by the various countries.

Iraq imports of all the vegetables are during winter and spring. However, other than tomatoes and eggplants, the quantities imported are very small.

The situation in Syria is the same, except that a larger proportion of eggplants (70%) is imported during the summer and fall seasons. Monthly trade data for Syria are also available for the years 1968 and 1969 and are shown in Table 7. It should be noted that Syria also imports sizable quantities of tomatoes (in the magnitude of about 3,000 tons) during the month of June.

Saudi Arabia imports only small quantities of vegetables during winter and spring, due to the availability of its own production at this time.

Kuwait imports approximately half of each of the different vegetables during winter and spring. Kuwait, however, is the largest market, during off-season, for vegetables other than tomatoes and eggplants.

TABLE - 6

EXPORTS OF VEGETABLES FROM JORDAN ACCORDING TO COUNTRY OF DESTINATION DURING THE WINTER AND SPRING SEASON - DECEMBER 1965 TO MAY 1966 (in metric tons, and % from total annual exports to each)

Commodity	Iraq	Syria	Saudi-Arabia	Kuwait	Lebanon
Tomatoes	34,560	28,933	1,026	5,923	11,112
% of total	94	98	43	46	8
Eggplants	1,417	7,686	144	1,487	4,857
% of total	100	70	54	51	84
Cucumbers	0.1	1.4	50	414	240
% of total	100	100	36	38	100
Green beans	190	275	36	390	199
% of total	100	100	... (1)	...	...
Squash	382	461	131	534	193
% of total	100	100	60	60	100
Green Pepper	58	440	19	425	178
% of total	100	100	...	...	100

(1) Data not available

SOURCE: Derived from data reported in: Clarke, John G. "A market Profile of Kuwait, with reference to winter supplies of fruits and vegetables", Agricultural Marketing Centre, Amman, Feb. 1968

TABLE - 7  
 MONTHLY HARVESTS IN SOME VEGETABLES IN SYRIA, 1968, 1969  
 (in metric tons)

	M	A	M	J	J	A	S	O	N	D
1	2,181	1,056	1,564	2,453	154	21	3	-	10	692
	755	641	3,423	2,763	322	4	-	-	1	99
	-	92	14	3	8	18	3	-	41	55
	-	427	33	-	-	-	14	-	-	94
	199	111	260	1,285	1,729	197	37	33	677	875
	167	116	621	1,008	1,495	43	-	-	365	1,091
1	3	12	8	1	-	-	-	-	4	26
2	4	11	11	-	1	50	2	-	-	7
1	-	-	-	99	394	1,189	3,616	5,992	3,186	265
-	-	1	5	63	171	1,579	4,616	7,741	3,229	1,061
-	6	1	422	1,654	446	278	149	218	143	-
-	-	15	294	1,471	493	78	-	80	136	37

Statistics of Syria.

4. SEASONAL PRICES

Data on seasonal prices of vegetables in Arab countries are not available. Again an indirect approach had to be adopted to give an idea of these prices. Weekly average wholesale prices in Beirut are available. These will give a good indication of the relative level of prices of the different vegetables in Arab countries since vegetables are imported from Jordan, the major supplier during off-season, to all the Arab countries under consideration. To cancel out the annual variation, a weekly average for a number of years (1968-1973) was computed. These weekly average wholesale prices are presented in Fig. I, for the period between December through April.

The highest prices are those of cucumbers followed by squash, green beans and sweet pepper. Tomatoes and eggplant prices are the lowest and are approximately at the same level. It is very doubtful, therefore, to produce these two vegetables profitably at these prices under greenhouse conditions.

Cucumber prices are very high all through winter and spring. Cucumbers are not available from any source during all of the winter season.

Squash prices are highest during January, February and the first half of March. Green bean prices are highest during January and February, and those of sweet pepper during February, March and the first half of April.

Tomato and eggplant prices are highest during March and April, and not during the winter months.

The demand for vegetables during the main season of production, when prices are low, is very inelastic. However, during off-season, when prices are high, or when the product is not available, the demand is judged highly elastic, so that a small reduction in price will result in a sizable increase in quantity demanded (proportionately more than the percentage decrease in price). The size of the market during off-season, therefore, for vegetables with high prices, can be substantially increased if prices can be lowered to a small extent. The prices will be lowered to some extent as a result of more availability from greenhouse production.



## 5. OTHER CHARACTERISTICS OF THE ARAB MARKETS

### 5.1 POPULATION AND INCOME

The data in Table -- 8 illustrate the situation of population and level of income in the various Arab countries in the Middle East. The populous countries of Iraq, Saudi Arabia and Syria have a much lower level of income than the small but very rich countries of Kuwait, the United Arab Emirates, Qatar and Bahrain. The latter countries are known to import the highest quality fruits and vegetables, as the high level of income of the average consumer there allows him to pay a premium for quality products. Emphasis, therefore, should be placed on these countries as potential markets for quality vegetables produced in greenhouses.

An important feature of the Saudi population is that only about one fourth is urban population, while the rest are mostly nomadic or rural. An important feature, however, of the level of income is the very high annual growth rate (7.6% per capita).

The high growth rate in population in Kuwait, Qatar and the United Arab Emirates, as a result of immigration should be kept in mind.

The expected large rise in the standard of living and the consequent fast development in supermarkets in Arab countries, will result in a strong rising consumer demand for quality products that are well graded, packed and available during all seasons of the year.



TABLE - 3 POPULATION (mid-1970), GROSS NATIONAL PRODUCT AT MARKET PRICES (1970 U.S. DOLLARS) AND AVERAGE ANNUAL GROWTH RATES 1960-70, IN VARIOUS COUNTRIES OF THE MIDDLE EAST

	Population ('000 <sup>a</sup> )	GNP (million U.S. dollars)	GNP per head (U.S. dollars)	Growth rate		
				Population	GNP	
Iraq	9 687	3 090	319	3.5	6.4	2.8
Saudi Arabia	7 740	3 220	416	2.7	10.5	7.6
Syria	6 259	1 750	280	3.4	5.9	2.4
Yemen, Arab Republic of	5 731	290	51	2.5	3.0	0.5
Jordan	2 276 <sup>a/</sup>	570	250	3.4	6.6	3.1
Lebanon	2 126 <sup>a/</sup>	1 610	757	2.8	4.7	1.8
Yemen, People's Democratic Republic of	1 312	140	107	2.3	- 2.8	- 5.0
Kuwait	748	2 850	3 810	9.3	7.9	- 1.3
Oman	657 <sup>b/</sup>	210	320	2.0	19.4	17.1
United Arab Emirates	243 <sup>b/</sup>	530	2 181	5.0	29.5	23.3
Bahrain	211	120	569	3.5	6.4	2.8
Qatar	79 <sup>b/</sup>	200	2 532	9.1	9.6	0.5

SOURCE: United Nations Economic and Social Office in Beirut, based on data compiled from national and international sources.

a/ Now estimate based on Sample Survey on Economically Active Population in Lebanon, November 1970, Central Directorate of Statistics, Ministry of Planning, Lebanese Republic (in Arabic and French). Previous estimates, based on a survey conducted in 1964, put the resident population in Lebanon at 2687 thousand at the end of 1970.

b/ Provisional figures subject to further revision.



## 5.2 TRANSPORT AND COLD STORAGE

The important markets of Kuwait and other Gulf countries are amongst the farthest markets from Lebanon, which results in difficult problems regarding the transportation, transit and preservation of highly perishable products like vegetables. The hot rigorous climate imposes further difficulties.

Most of the vegetables are transported by ordinary trucks and a small proportion by refrigerated ones. Although the number of refrigerated trucks is increasing, it is still limited in number. The costs of transport to the different Arab countries, by means of ordinary and refrigerated trucks are given in Table-9. Table - 9 also gives the duration of the trip.

A very limited quantity of vegetables is sent to the Gulf area by air. The principal buyers are the oil companies and the supermarkets. The air freight rate from Beirut to the different Gulf countries varies from L.P. 80 to 100 per kilogram. In recent years, the total annual quantity of vegetables transported by air from Beirut, has been only about 100 tons, which is a negligible quantity compared to that transported by land. Fruit and vegetables are carried as individual freight on a kilogram basis. Chartered planes are not used for the purpose because of the lack of a return freight.

Some cold stores are available in the different countries under consideration, but there is a need for more. Most of these stores, moreover, are multi-purpose, which are used for fruits, poultry products and other perishable besides vegetables.

TABLE - 9

TRANSPORTATION COST AND TRIP DURATION BY ORDINARY AND REFRIGERATED TRUCKS BETWEEN LEBANON AND SOME ARAB COUNTRIES

Country	Cost of transport (L.L. / ton)		Trip Duration (Days)
	Ordinary Trucks	Refrigerated Trucks	
Iraq	90	120	2½ - 3
Kuwait	100	130	3 - 4
Saudi Arabia	110	150	4 - 5
Qatar & Bahrain	110	160	5

SOURCE: Interview with exporters

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The limited cold storage capacity and the lack of export organization and regulation in Jordan, the major supplying country, are causing unstable conditions in the supply of vegetables and, consequently, a sharp daily fluctuation in prices. <sup>(1)</sup>

(1) See Clarke, John G. "A market profile of Kuwait: With Special References to Winter Supplies of Fruits and Vegetables", Agricultural Marketing Centre, Amman, Jordan, February, 1968.

## 6. CONCLUSION

Market prospects of tomatoes and eggplants during off-season are poor due to cheap supplies from Jordan. The Ghor area in the Jordan valley, where the winter and spring vegetables are produced, is a natural greenhouse due to its location below sea level, and, therefore, its high temperature. It is doubtful, therefore, to produce these two vegetables profitably under greenhouse conditions. There might be limited possibilities for quality tomato and eggplant in Kuwait and the other rich Gulf countries, during March and April when prices are highest.

Market prospects for cucumbers, squash, green beans and sweet pepper are good, in view of their high prices during off-season, and in spite of the fact that only small quantities are currently consumed. The demand for vegetables during the main season of production, when prices are low, is very inelastic. However, during off-season, when prices are high, or when the product is not available on the market, the demand is judged highly elastic, so that a small reduction in price will result in a sizable increase in quantity demanded (proportionately more than the percentage decrease in price). The size of the market during off-season, therefore, for vegetables with high prices, can be substantially increased if prices can be lowered to a small extent. These prices will be lowered to some extent as a result of more availability from greenhouse production.

The highest prices during off-season are those of cucumbers followed by squash, green beans and sweet pepper. Tomato and eggplant prices are the lowest and are approximately at the same level.

Cucumber prices are very high all through winter and spring. Cucumbers are not available on the Arab markets from any source during all of the winter season.

Squash prices are highest during January, February and the first half of March due to limited availability from Jordan. Green bean prices are highest during January and February, and those of sweet pepper during February, March and the first half of April.

Tomato and eggplant prices are highest during March and April, and not during the winter months, again due to the seasonal pattern of supply from Jordan.

The production planning, for greenhouse production, should be such that the bulk of harvest will be during the above periods when prices are highest.

The populous countries of Iraq, Saudi Arabia and Syria have a much lower level of income than the small but very rich countries of Kuwait, the United Arab Emirates and Qatar. The latter countries are known to import the higher quality fruits and vegetables. The level of income enjoyed by the average consumer there allows him to pay a premium for quality products. Kuwait, moreover, is the largest market for vegetables, other than tomatoes and eggplants, during off-season. Emphasis, therefore, should be placed on these countries as potential markets for quality vegetables produced in greenhouses. The very high growth rate in population in Kuwait, Qatar and the United Arab Emirates, as a result of immigration, is another encouraging feature of these markets.

The expected large rise in the standard of living and the consequent fast development in supermarkets in Arab countries will result in a strong rising consumer demand for quality products that are well graded, packed and available during all seasons of the year.

A P P E N D I X

TABLE - 10

PRODUCTION AND TRADE OF SOME VEGETABLES IN LEBANON  
1965 - 1971  
(in metric tons)

Commodity	1965	1966	1967	1968	1969	1970	1971
Tomatoes- Prod	45,000	53,000	59,000	59,500	70,000	...	...
Exp	3,700	4,626	4,452	6,136	4,993	7,615	5,947
Imp	5,200	12,551	11,014	8,635	6,286	8,904	11,326
Cucumbers-Prod	16,500	20,000	21,900	30,000	28,600	...	...
Exp	100	128	267	317	1,179	391	348
Imp	900	2,252	543	1,372	430	1,124	1,077
Squash- Prod	13,500	7,400	8,025	9,332	9,467	...	...
Exp	...	...	343	769	1,342	1,240	1,158
Imp	...	...	400	96	97	72	114

SOURCE: (1) Ministry of Agriculture

(2) Trade Yearbooks of Lebanon