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AGENDA PAPER

on

AGRICULTURE IN LEBANON

Prepared

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Preface

The importance of agricultural and rural development in the improvement of the standards of living in low and medium-income countries is increasingly recognized as new nations gain experience in economic development processes. Many of these nations are faced with the task of transforming a subsistence level agricultural system into a more productive contributor to national economic growth at a time when their rate of population increase is placing great demands on national capabilities for the production of food and fiber.

Although materials and methods from agriculturally advanced nations can seldom be transferred directly to developing nations without testing and adaptation to local environments, the evaluation of factors that have contributed to agricultural progress in the developed countries is useful in isolating principles or procedures that may help to accelerate agricultural development elsewhere. These factors are numerous, interrelated and complex, but they have permitted achievement of an abundance and efficiency in the agricultural sector such as developing nations aspire to, as they strive for economic, social and political stability.

The past 25 years have witnessed very rapid progress in agricultural development in many of the developing nations. This has been marked by a steady infusion of science and technology. Increased productivity from improved materials and techniques, rather than from more land and farm labor, accounts for a greater part of the expansion in agricultural output.

Annual increases in agricultural output are usually very low, and do not match with population growth rates... Even in a

country like the U.S., it has rarely exceeded 2 percent. Therefore developing nations with their tremendous task of meeting needs of growing populations must try to assemble all possible effective measures and apply them in modernizing agricultural practices.

Lebanon like all agriculturally developing countries, must establish the basic economic and social conditions that will encourage farmers to expand production. This agenda paper has attempted to present some of these conditions. Among these are systems of land tenure, essential agricultural production inputs, stable and adequate prices for farm products, accessible and dependable markets, adequate social and capital infrastructure, and supplies of consumer goods that enhance and improve living standards. External agencies may be helpful at times furnishing the kinds of support and technical assistance that are involved most directly in expanding production.

This agenda paper presents in brief the status of the agricultural sector in Lebanon prior to 1975. It then goes on to present some of the authors' views and outlook on development of the various components of agricultural production. It is hoped that it will be helpful in furnishing some background information and experience for the use of agricultural planners and administrators for the reconstruction and development of Lebanon.

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SECTION ONE

INTRODUCTION

Lebanon is considered as one of the greenest countries of the Middle East since almost 1/3 of its total area is either arable land or cultivated with permanent crops (Table 1.1 and Appendix I). About 1/4 of these cropped areas are irrigated, and the remainder is dry land. As compared to the Middle East, Lebanon has a mild climate, with dry summers and rain coming during the winter season. The annual precipitation along the coast is about 900 mm, in the mountains it exceeds 1000 mm and in the Beqa'a plain about 400 mm. The southern portion of the Beqa'a is drained by the Litani river which flows south to the Mediterranean Sea. The northern portion is drained by the Orontes (Al-Assi) river which flows north into Syria and then cutting through the mountains into the sea. The soils are derived primarily from limestone, calcareous, with medium to heavy texture, low in organic matter and nitrogen and have in general a high pH.

Agriculture in Lebanon plays a minor role in the economy of the country, since most of the gross national product (GNP) depends on human services. It has been reported that the GNP of Lebanon amounted to 6,308 million L.L. in 1973 (Statistics of the Ministry of Planning as reported by K. Kubah, 1977). The contribution of the Agricultural sector was 11% (675 million L.L.); whereas industry contributed 16% (1,038 million L.L.) and human services 73% (4,595 million L.L.). It has been estimated that in 1965 about 30% of the economically active population was involved in agriculture whereas in 1976 the percentage dropped to 13.5% (Table 1.2).

Table 1.1 Total Area and Land Use in Lebanon*

	<u>1000 HA</u>
Total area ¹	1040
Land area ²	1023
Arable land ³	240
Land under permanent crops ⁴	108
Permanent pastures ⁵	10
Forest and wood land ⁶	80
Other land ⁷	585
Irrigated land**	65
Coastal areas	20
Mountain areas	15
Beqa'a plain	30

1. The total area of the country, including area under inland water bodies.
2. The total area, excluding area under inland water bodies.
3. The land under temporary crops, temporary meadows for mowing or pasture, land under market and kitchen gardens, and land temporarily fallow or lying idle.
4. The land cultivated with crops which occupies it for long periods and need not be replanted after each harvest, such as shrubs, fruit trees, nut trees and vines, but excludes land under trees grown for wood or timber.
5. The land used permanently for herbaceous forage crops, either cultivated or growing wild.

*FAO Production Yearbook, Vol. 30, 1976.

**F. Saadeh, Development studies Association Conference on National development and Agricultural Development in Lebanon, 1969. Irrigated areas may increase to 100,000 hectares if irrigation projects are implemented.

6. The land under natural or planted stands of trees, whether or not productive, and includes land from which forests have been cleared but which will be reforested in the foreseeable future (during 1975-76 troubles 1/2 of the forest trees were cut or burned).
7. Includes unused but potentially productive land, built on areas, wasteland, parks, ornamental gardens, roads, lanes, barren land, and any other land not specifically listed under items 3 through 6.

Table 1.2 Total, Agricultural, and Economically Active Population
(in thousands*)

Year	Population		Economically Active Population ²		
	Total	Agricultural ¹	Total	Agriculture ³	% Agriculture
1965	2151	626	572	166	29.1
1970	2469	487	644	127	19.7
1975	2869	404	745	105	14.1
1976	2959	399	768	104	13.5

1. All persons depending for their livelihood on agriculture. This comprises all persons actively engaged in agriculture and their non-working dependants.
2. All persons engaged or seeking employment in an economic activity, whether as employers, own-account workers, salaried employees or unpaid workers assisting in the operation of a family, farm, or business.
3. Includes all economically active persons engaged principally in agriculture, forestry, or fishing.

*FAO Production Yearbook Vol. 30, 1976.

SECTION TWO

THE STATUS OF LEBANESE AGRICULTURE PRIOR TO 1975

2.1 Major Crops

Although the area of agricultural land in Lebanon is relatively small, the diversified topography and climate of this area permits the production of a wide variety of crops. Along the narrow coastal strip, citrus, bananas and vegetables are grown. At medium heights, olive groves and stone fruits are the predominant crops, while apples constitute the major crop at high elevations. In the Beqa'a plain which is the major agricultural area constituting 43% of the total agricultural land, a variety of crops are grown including wheat, barley, potatoes, sugarbeets, and vegetables. Grape vines also occupy a sizable area of the plain. Tobacco, another important crop, is mainly grown in southern and northern Lebanon.

Tables 2.1 and 2.2 summarize the information on major crops only. Detailed information on all crops for the years 1964-1973 is given in Appendix II. The tables indicate that the yield of a number of these crops is low and can be considerably increased with the utilization of improved agricultural practices. These will be discussed in section four.

The value of all agricultural products for 1973 was slightly below 700 million L.L., out of which, crops were valued at about 500 million L.L. and animal produce accounted for the major portion of the remaining 200 million L.L.

Table 2.1 Areas and Yields of Major Annual Crops. 1973 Statistics*

Crop	Area (ha)	Total Yield (tons)	Yield (tons/ha)
Wheat	50,125	55,138	1.1
Potatoes	8,891	116,236	13.1
Tobacco	7,509	9,876	1.3
Barley	7,332	6,511	0.9
Sunflower	5,420	665	0.1
Tomatoes	4,359	59,127	13.6
Peanuts	3,461	4,840	1.4
Lentils	3,067	1,232	0.4
Cucumbers	3,065	29,827	9.7

Table 2.2 Areas and Yields of Major Perennial Crops. 1973 Statistics*

Olives	30,160	32,250	1.1
Grapes	18,157	107,420	6.0
Apples	12,291	166,177	13.5
Citrus	11,939	306,735	25.7
Stone fruits	7,669	62,948	8.2
Bananas	2,660	43,900	16.5

*Statistiques Libanaises No. 9, 1973.

2.2 Animals

The animal industry in Lebanon has always been an important part of the total agricultural sector particularly during the sixties and early seventies when the poultry industry was rapidly expanding in the country. The value of the animal products has varied between 25-40% of the total agricultural output and the increase during that period was mainly due to increases in egg and poultry meat production in the country. In spite of this overall increase, animal production in Lebanon has not kept up with increases in local demands for animal products. Approximately one third of the deficit in balance of trade of agricultural products is due to imports of animal products.

Prior to 1975, Lebanon used to import approximately 4/5 of the red meats consumed in the country and 3/5 of the milk and milk products consumed. This is in addition to imports of fish, canned meats, animal fats, skins and hides, wool and others.

2.2.1 Land Used as Pasture or for Fodder Production

Studies conducted by the Animal Production office prior to 1975 have shown that sub-lands cover approximately 800,000 hectares in Lebanon.

Land that was actually planted with fodder crops did not exceed 18,000 hectares (2% of the agricultural land) and therefore as a result of this shortage in feed crops, Lebanon has been importing grains, oil seeds, concentrates and other feedstuffs valued at over 120 million L.L. per year.

2.2.2 The Animal Feed Industry

The animal feed industry in Lebanon started at approximately the same time as the poultry industry. In 1956 a couple of poultry producers started to import concentrates from the U.S. containing protein supplements, vitamins, trace minerals and certain feed additives. These concentrates were locally mixed with grains to make up the complete feed according to specifications of the manufacturers of these concentrates. In 1964, feed manufacturers shifted from importing the regular concentrate to that of a super concentrate containing animal protein supplements, vitamins, trace minerals and additives excluding the plant protein supplement which was mainly soybean meal. This was done because importers started getting soybean meal by bulk in large quantities and therefore this contributed to a lowering in feed costs.

This practice continued until 1968-69 when few feed manufacturers started learning more and more about feed formulation and manufacturing and the applications of linear programming to least cost formulations. At this time, feed manufacturers started depending less and less on imported concentrates and more and more on local concentrates because few manufacturers went into the concentrate producing business. Some plants established their own feed analysis laboratories which enabled them to use new feedstuffs more and more in their formulations. Others went into computer formulation which enabled them to make frequent changes in their rations to keep costs at a minimum. They developed into a highly sophisticated business with life cycle feeding and seasonal rations. The feed industry in Lebanon was on its way to becoming a highly developed industry before the war broke out.

2.2.3 Livestock and Poultry Numbers*

The most important animals produced in Lebanon are dairy cattle, sheep, goats broilers, and laying chickens. There are others of less importance like pigs, horses, mules, donkeys, camels, and rabbits.

2.2.3.1 Cattle

The number of cattle in Lebanon before 1975 did not exceed 100,000 heads. About 50% of these could be classified as dairy or milk animals and the rest used for various purposes, particularly work animals. The amount of fresh cows milk produced in the country did not exceed 200,000 liters per day, 60% of which was consumed in the rural areas of production and about 40% sent for processing and consumption in big towns and cities.

2.2.3.2 Sheep

The number of sheep in Lebanon varies between 200-250,000 depending on when the count is made. It is very difficult to get exact figures on sheep because of the roaming flocks and their movements into Syria and back into Lebanon. Sheep flocks in Lebanon are an important source of milk, meat and wool, but there are no reliable figures on these products.

2.2.3.3 Goats

It is estimated that there were about 450,000 goats in Lebanon before 1975. Most of these are Baladi goats of very low productivity. This large number of goats contributes sizeable amounts of milk and meat. The goat has always been referred to as the menace of the Lebanese mountain because

*Appendix III gives detailed information on the status of animal production in Lebanon for the years 1968-1973.

it is very active, climbing trees to eat their leaves and cleaning the land of its vegetation. The fault does not really lie on the goat as much as the owner that allows it to overgraze.

2.2.3.4 Poultry

The poultry industry has taken gigantic steps during the sixties and early seventies in Lebanon and many countries of the Middle East. Poultry meat production in Lebanon increased from less than 5 metric tons in 1960 to 18 tons in 1970. This broiler production is similar in technique to U.S. standards. It is estimated that there were about 3 million layers in Lebanon before 1975. The yearly production of table eggs ranged between 550 to 600 million per year, out of which 200-250 million were exported to various countries in the region.

2.3. Mechanization

The agricultural land holdings in Lebanon are small and fragmented. A statistical sampling of these holdings in 1961 showed that the average size was less than 2.4 hectares. Out of these small holdings, 88% were fragmented. In spite of this condition, which greatly reduces the economic viability of mechanized farming, and limit the use of machinery, one-half of the workers in Lebanon earn their living from farming, and the number of tractors being used on farms is increasing annually. Lebanon is considered as a country with the largest number of tractors per hectare (13 tractors per 1000 hectares). Mechanized farming has been stimulated in part by the rising costs of labor. In the case of the very poor areas, and those which are terraced and need specialized machinery, such a trend has not been observed.

Table 2.3 shows the trend in the increase of the number of tractors used in agriculture from 1948 to 1972. Figures for harvesters-threshers have also been reported to be for 1961-65 (47) for 1970 (60) for 1971 (70) and for 1972 (80).

Table 2.3 Tractors in use from 1948-1972*

Years	1948-52	1961-65	1966	1967	1968	1969	1970	1971	1972
Crawl	63	110	100	106	110	120	140	160	170
Wheel	57	1349	1980	2140	2140	2230	2360	2540	2685
Total	120	1459	2080	2146	2250	2350	2500	2700	2855

2.4 Water Resources

The total area under irrigation in Lebanon amounts to only 65,000 hectares. Each hectare is supplied by 10,000 m³ annually. Hence the total water that is being used for irrigation is 650 x 10⁶ m³.

2.4.1 Distribution of Water Resources**

The water resources are distributed as follows:

Annual rain fed water (precipitation)	9700 x 10 ⁶ m ³
Annual surface water (river and spring flows)	4025 x 10 ⁶ m ³
Annual recharged underground water	600 x 10 ⁶ m ³
Total available water	4625 x 10 ⁶ m ³
Total lost water as evaporation and uncontrolled run off (9700-4625)	5075 x 10 ⁶ m ³
The surface water that flows outside Lebanon, that is Syria through Alassi-river and Alkabir river, and to Palestine through Hasbani river	is 650 x 10 ⁶ m ³
Total surface water available in Lebanese rivers and springs	is 3375 x 10 ⁶ m ³

*FAO Production Yearbooks.

**Ministry of Water and Electricity; Minister J. Sharaf El Din report, April, 1971, and the Agricultural Development Plan, Green Plan.

This water is distributed as follows according to season and regions in Lebanon:

	<u>During Dec.-May</u>	<u>During June-Nov.</u>
Western basins	1958 x 10 ⁶ m ³	515 x 10 ⁶ m ³
Beqa'a basins		
Assi river	43 x 10 ⁶ m ³	54 x 10 ⁶ m ³
Litani river	488 x 10 ⁶ m ³	153 x 10 ⁶ m ³
Hasbani river	4 x 10 ⁶ m ³	9 x 10 ⁶ m ³
Other springs	12 x 10 ⁶ m ³	35 x 10 ⁶ m ³
Drinking water	52 x 10 ⁶ m ³	52 x 10 ⁶ m ³
Total	2557 x 10 ⁶ m ³	818 x 10 ⁶ m ³

From the 818 x 10⁶ m³ available from June to November, 125 x 10⁶ m³ are available during August, where only 100 x 10⁶ m³ are used, due to the conventional methods of irrigation, which do not allow irrigation at night. From the 600 x 10⁶ m³ underground water, only 160 x 10⁶ m³ have been used for irrigation, industry and home consumption; leaving 440 x 10⁶ m³ that is not utilized. Part of this water is lost as underground water flow to the sea.

2.4.2 Actual Water Use in Lebanon

Out of the 2557 x 10⁶ m³ available during the winter (December - May) season only 200 x 10⁶ m³ are used for irrigation, 200 x 10⁶ m³ are stored in the Qaroun Lake for later use and 52 x 10⁶ m³ are used for drinking. The rest 2105 x 10⁶ m³ are lost as surface flow to the sea.

2.4.3 Existing Irrigation Projects

The irrigation projects that have been developed since 1943 are:

	<u>Area under irrigation(hectares)</u>
1. Yamouneh irrigation project	3000
2. Anjar irrigation project	1000
3. Akkar irrigation project	1800
4. Adonis (Ibrahim river) irrigation project	500
5. Kasmieh irrigation project	5000
6. Experimental Litani irrigation project (Saida region)	1200
Total	<u>12500</u>

2.4.4 Projects under Study

	<u>To irrigate (hectares)</u>
1. Qa'a and Hirmil irrigation project	6000
2. Akkar plain irrigation project	6000
3. Zghorta-El-Koura irrigation project	7000
4. Southern Lebanon irrigation project	13000
5. Western plain irrigation project	31000
	<u>63000</u>

2.5 Ministry of Agriculture and Autonomous Boards

2.5.1 Ministry of Agriculture

An organizational chart of the Ministry of Agriculture is given in Appendix IV. It is self-explanatory and thus there is no need to discuss the functions of the various divisions, departments and sections within the central administration. However, the functions of the autonomous boards which report directly to the Minister are not given on the chart. So the functions of each of these boards is given here.

2.5.2 Autonomous Boards

2.5.2.1 Fruit Office

The function of the fruit office is to organize and encourage the export of Lebanese fruits. To achieve its goals, it can take the following measures:

- Attempt at the improvement of fruit quality.
- Set specifications for grading and packing of fruits for export.
- Establish pilot packing houses.
- Supervise private packing houses.
- Ensure the availability of fruit storage houses.
- Collect statistics on agricultural trade in Lebanon and abroad.
- Advertise the Lebanese fruits and participate in national and international agricultural fairs.
- Establish branches for the office abroad.
- Expand the export market of the Lebanese fruits.
- Ensure the availability of transportation for the export of fruits.
- Set specifications for the export of fruits and agree on minimum prices with the importing country.
- Limit the illegal competition in the export of fruits.
- Inspect and certify fruits ready for export.
- Negotiate contracts on behalf of the Lebanese contractors and see that they abide by the terms of the contract.
- Guarantee to the importing country the quality of the imported fruits.
- Encourage the establishment of cooperatives.
- Suggest means for organizing the trade and setting tariffs for the export of fruits.

2.5.2.2 Green Plan

The main function of the Green Plan is rural development. This is done by the following means:

Increase of the agricultural area by land reclamation.

Construction of rural roads.

Development of water retention techniques such as the building of reservoirs and canals.

Reforestation and water shed management.

Introduction of greenhouses and hydroponics so as to increase crop production.

The Green Plan has carried out econometric studies of possible markets for the Lebanese produce so as to advise the farmers on what crops to plant.

It has also conducted studies on agricultural industrialization.

The Green Plan cooperates with a number of International Organizations such as the FAO, UNDP, ECWA and the World Food Program.

2.5.2.3 Animal Production Office

The function of this office is to encourage the packing, storing and marketing of animal products, attempt at limiting their importation, and help in the export of locally produced animal products. To achieve its goals, it can take the following measures:

Assist the Ministry of Agriculture in the improvement of beef, dairy and poultry production.

Advise the Ministry of Agriculture on the prices of equipment, supplies and drugs used in animal production and processing of animal products.

Supervise the various private concerns dealing with the processing, storing and marketing of animal products through the:

Establishment of pedigree records of animals.

Suggesting ways and means for the improvement of animal production, marketing, importing and exporting of such products.

Setting specifications for the production, grading, packaging and storing of animal products and animal feed. Licensing the establishment of plants for the processing and storing of animal products.

Establishing pilot plants for the processing of animal products.

Setting standards for the import and export of animals and animal products and giving licenses for the export of animals and animal products.

Collect data and statistics on animal production in Lebanon and assess its future potential in relation to local and foreign markets.

Advertise the Lebanese animal products and participate in local and international fairs.

Aim for the improvement of marketing of animal products on the local and foreign markets.

Assist local animal producers and cooperatives through:

Helping cooperatives in obtaining short-term loans to increase animal production and marketing of the products.

Assisting cooperatives in securing animals, drugs and machines for the processing of products.

Processing of animals for the cooperatives in the pilot plants operated by the Office.

Assist in setting reasonable prices for animal products

based on the actual cost of production.
Submit suggestions pertaining to trade and tariffs of
animal products.

2.5.2.4 Silk Office

The function of the silk office is the production of the silkworm and raw silk to satisfy the local demand and the development of silk products. To achieve its goals, it can take the following measures:

Establish and operate facilities for the production of the silkworm.

Establish and operate facilities for the drying of cocoons and extraction of silk.

Establish and operate laboratories for the quality control of silk and silk textiles.

Supply the local demand with mulberry seedlings and silkworm either by importation or by local production.

Export silk textiles in excess of the local demand.

Purchase all locally produced cocoons.

Collect data and prepare studies for establishing a policy to encourage production of silk.

Carry out studies on methods to increase silk production.

Participate in a training program on silk production.

Organize fairs and meetings on silk production.

Examine locally produced silk and issue necessary certificates.

2.5.2.5 Agricultural Research Institute

The agricultural research institute maintains and operates several research stations. They are:

- a. Tel Amara - research on soils, water and crops is carried out.
- b. Terbol - research on animal production.
- c. Fanar - has three branches.
 - 1. Middle East Animal Health Institute
 - 2. Research on insect and disease pests of crops
 - 3. Secondary agricultural school
- d. Abdeh - research on citrus production and diseases and field crop production.
- e. Lib'a - research on soils and water.
- f. Kfardan.

2.6 Aspects of Rural Development

2.6.1 Introduction

In this paper rural development is defined as improving living standards of the mass of the low-income population residing in rural areas and making the process of their development self-sustaining. This simple definition has three important features with substantial implications for how rural development programs are designed and implemented:

- a. Improving the living standards of the subsistence population involves mobilization and allocation of resources so as to reach a desirable balance over time between the welfare and productive services available to the subsistence rural sector.
- b. Mass participation requires that resources be allocated to low-income regions and classes and that the productive and social services actually reach them.
- c. Making the process self-sustaining requires development of the appropriate skills and implementing capacity and

the presence of institutions at the local, regional, and national levels to ensure the effective use of existing resources and to foster the mobilization of additional financial and human resources for continued development of the subsistence sector. Self-sustenance thus means involving, as distinct from simply reaching, the subsistence populations through development programs.

2.6.2 Rural Communities

2.6.2.1 Farm Sizes

According to the data shown in Table 2.4, the situation with regards to farm sizes in Lebanon is alarming because most of the holdings are widely scattered in small parcels which result in poor management and poor farm efficiency. The situation with large farm sizes is also unsatisfactory. Holdings falling between 10-200 dunums category, over 40% are having 5-9 parcels and about 17% have 10-24 parcels. Even in the category of 200 dunums or more nearly 31 percent of the farms consist of 10-24 parcels or even more in some cases. This type of fragmentation is quite prominent in Mount Lebanon and some parts of South Lebanon where the fragmentation of holdings go up by 35 parcels in certain cases. The farm communities thus can never make best use of their human and physical resources.

Out of total holdings of 142,923, nearly 90,000 farm sizes are less than 20 dunums which are not economic units. These small holdings are again widely scattered into small parcels ranging between 5-24 parcels. Another serious problem is the findings of a survey study conducted by Dr. Al-Haj (FAS, AUB) in 1974, which

indicated that on the average 52% of the land in the three districts of Lebanon is in the hands of owner-operators, 9% with renters, 12% with share-croppers and 27% is under a combination of the three types. The owner-operators practice is mostly prevalent in irrigated areas and surprisingly most prominent in Akkar (66%), followed by South Lebanon with 57% and 33% in Beqa'a. This situation indicates that owner-operators and tenant have equally important roles in the operation of agricultural lands in the three districts, that is North Lebanon, Mount Lebanon and Beqa'a. Around 80% of all contracts in these districts are seasonal or annual and lease contracts are generally made verbally which reduces the security of the lease contracts due to absence of precautionary measures and thereby result in disputes between the owner and the tenants. The renting is usually much higher than the rental value of the farm. This situation warrants the attention of the Lebanese government to conduct more intensive investigation of the land tenure problems and take appropriate steps to stream line the procedures and tenurial status of land.

2.6.2.2 General Infrastructural Conditions of the Rural Areas

The condition of agricultural roads in most rural areas with the exception of Mount Lebanon is very poor. There also appears to be an absence of farmers cooperatives which if properly organized can help develop local potentials and generate capital which could best be used for constructing agricultural roads on self-help basis, arranging marketing of fresh fruits and vegetables as to improve the socio-economic condition of the rural communities. The health and education facilities are also very remote in most rural areas of Lebanon and there is a general trend of migration from rural to urban areas. Most of these migrants, having poor economic

background, not only confront housing problems, but also create health hazards by polluting the entire city environments. Some of them are self-employed and earn their livelihood by unknown means.

It may be pointed out here that there are several agricultural service institutions in different ministries working for the welfare of the rural communities but unfortunately all these institutions are operating independently. Their functions overlap with each other and duplicate in many cases which adversely retard the efficient utilization of limited human and physical resources and therefore the quality of the services extended to the farming communities is far below the desired standards.

2.6.3 Agricultural Cooperatives

2.6.3.1 Lebanese Law of Cooperative Societies

According to the law of Cooperative Societies in Lebanon promulgated by Legislative Decree No. 17199 of August 18, 1964:

- a. A cooperative is an association of persons with an unlimited capital for non-profit making objects. It is founded according to the aforementioned law of Cooperative Societies and its primary object is to improve the economic and social conditions of its members through their concerted efforts in accordance with cooperative principles.
- b. Every cooperative society must have a name specifying its nature, type of work and location. The expression "Cooperative Society" must be an integral part of the name. If the society has a limited liability, this must be added. The full name must be mentioned together with its registration number with the Cooperative Department on all its books, records, agreements, contracts,

correspondence, and printed matter.

No association other than a genuine cooperative society is authorized to utilize the term cooperative in its name.

- c. A cooperative society operates within the geographic area delineated in its bylaws. Its headquarters must be located within such an area. It is not authorized to establish branches outside the territorial boundaries of said area, except for sustaining its own interests like purchasing needed agricultural inputs or marketing its produce, provided it obtains prior approval of the Department of Cooperatives.
- d. The Law does not permit the establishment of more than one cooperative society for the same purpose within the same village, with the exception of organizing a cooperative society for a specific subsidiary purpose that falls within the scope of a multi-purpose cooperative society in that village.

However, the Department of Cooperatives reserves the right to resolve the issue in this case.

In cities whose populations exceed 20,000, the Law allows the formation of more than one society for one object.

But a distinction should be made in the respective names of the societies.

- e. The number of persons who join to establish a cooperative society shall not be less than 10. However, the Department of cooperatives may, for justifying reasons, authorize the formation of cooperatives whose founders are less than this number.

2.6.3.2 Brief History of the Cooperative Movement in Lebanon

The history of the cooperative movement in Lebanon, may be reviewed in two phases.

The first phase begins in 1937 and ends in 1970, and the second starts in 1971 up until now. This distribution focuses on the second phase the evaluation of cooperatives during the years of 1971, thru 1976. It should be mentioned however at the outset that the first cooperative in Lebanon was an agricultural association established in the village of Aabadiye in 1937.

2.6.3.3 The Historical Evolution of the Cooperative Movement Throughout the Years of 1971-1976

The cooperative movement in Lebanon started progressing as of 1971, and its growth has been impressive in subsequent years. This was significantly influenced by: (1) Legislative Decree No. 2989 issued on 17.3.1972 which organized the activities of the cooperative societies; (2) Decree No. 2981 dated 17.3.1972 which established the Bylaws of the National Union for Cooperative Credit, and (3) amendments in the laws governing the cooperatives societies and the National Federation of Cooperative Societies.

It was also due to the policy and active role pursued by the Department of Cooperatives, its preparation of the conditions for success, like its preparation of sample bylaws, its conducting of economic and sociological studies, its organization of audit services, and its training courses and educational sessions.

In order to have a clear picture of the development of the cooperative movement, Table 2.5 is cited below to show us the progress made by the cooperative movement from 1971 until 1976.

Thus, by 1974 the number of cooperatives in Lebanon reached

104 with a total of 22269 members, a share capital of 11.41 million L.L., a working capital of 76.7 million L.L. and reserve funds of 1.46 million L.L. In 1975 the total number of cooperatives reached 115 with 29999 members, a share capital of 12.32 million L.L., a working capital of 72.71 million L.L., and reserve funds of 2.62 million L.L.

In 1976 the total number of cooperatives did not change and remained at 115, but the total number of their members increased to 33096, with a share capital of 12.43 million L.L., a working capital of 35.9 million L.L. and reserve funds of 1.9 million L.L.

These figures reflect to a certain extent the successful growth of the cooperative movement in Lebanon, as well as the overall effects of the 19-months civil war on the movement as a whole.

Below is a description of the evolution of the different types of cooperatives.

a. Agricultural Cooperatives and their Development

from 1971 to 1976

The first cooperative legislation in Lebanon, pertained to the agricultural sector. Accordingly, the earliest cooperative societies established were agricultural. The economic and social importance of the agricultural sector in Lebanon and its need for organization and modernization made it an appropriate field for cooperative work, whether from the financial and productive aspects

or from the industrialization and marketing of its products. Many large cooperatives appeared on the agricultural scene like (1) the cooperative of the sugarbeet growers which undertakes the marketing of all sugarbeets produced in Lebanon; (2) the Beqa'a cooperative for the production and distribution of eggs which markets 47% of the Lebanese egg production; (3) the potato cooperative that markets about 55% of the Lebanese potato production; and (4) the vegetable, the fruit, the grape, the olive, the silk worm growing and the collection and marketing of milk cooperatives and others. These achievements in the Agricultural sector contributed to the establishment of agricultural industries, which in turn had positive effects on the technological progress in agriculture and on augmenting its contribution to national income. The progress attained by the cooperative movement in the agricultural sector is reflected in a general way in Table 2.5 up to 1975. This table also shows a downward trend owing to the damages that befell the agricultural cooperatives in the course of the war time events. These damages have seriously inhibited progress in agriculture, hindering it from realizing the expected goals. In 1974 the number of agricultural cooperatives reached 64, encompassing a total of 4007 members with a share capital amounting to 8.3 million L.L., actual working funds were 50.77 million L.L. and the reserves were 1.19 million L.L. By 1974 the agricultural cooperatives owned machinery, equipment and real estate valued at about 2.5 million L.L. These cooperatives owned 30 tractors, 16 trucks, and other kinds

of agricultural machinery and sorting and refrigeration centers. The workers employed by the agricultural cooperatives were as many as 350.

In 1975 the number of agricultural cooperatives was 67 with a membership of 4137 and a share capital of 8.45 million L.L. and working funds of 44.66 million L.L. and reserve funds of 1.8 million L.L. However, in 1976 the number of agricultural cooperatives did not grow beyond 67 with 4144 members. The share capital totalled 8.46 million L.L., the working funds 17.71 million L.L., and reserve funds 1.42 million L.L. The agricultural cooperatives have proven their utility and effectiveness in connection with the improvement and development of the agricultural sector by providing: multiple and various services to the farmers, means of production, e.g., machinery and equipment, requisits of production, e.g., fertilizers, seeds, pesticides, animal feed and so forth; by insuring the sorting and marketing of the produce; and by facilitating access to credit that the farmers needed for the development and modernization of their activities. It is estimated that the increase in the income of the members from the reduction of the cost of production and/or the sale of the produce at better prices at not less than 10%, which enabled the farmers to improve their living conditions.

b. The Evolution of Consumers Cooperatives During 1971-1976

Consumers cooperatives were first launched immediately after the creation of the service of cooperatives within the Ministry of Agriculture on the basis of Legislative

Table 2.5

Cooperatives in Lebanon by type from 1971 to 1976

Type of Coop	Year	No. of Coops	No. of Members	Share Capital LL	Working Capital LL	Reserve Funds LL
Agricultural	1971	32	2110	3059537	26768753	615595
	1972	50	2804	7044033	37446330	1023673
	1973	61	3596	7942641	44155172	1177286
	1974	64	4007	8306895	50767541	1194965
	1975	67	4137	8459053	44663350	1797638
	1976	67	4144	8459273	17709900	1416853
Consumer	1971	8	1383	104880	724503	89039
	1972	16	4784	652384	1661610	131716
	1973	22	11458	1345190	6505200	286025
	1974	35	18147	3029404	25867287	267089
	1975	41	25724	3781320	27930227	463430
	1976	41	28814	3890115	18179786	497010
Cultural	1971	1	14	560	11776	2657
	1972	1	14	560	500	3646
	1973	2	22	29160	36600	3950
	1974	3	40	24450	28619	700
	1975	3	40	27950	33220	1150
	1976	3	40	27950	15622	800
Crafts	1971	-	-	-	-	-
	1972	-	-	-	-	-
	1973	1	15	1900	-	-
	1974	1	16	1900	32000	800
	1975	3	36	2900	35000	1200
	1976	3	36	2900	28000	1000
Savings & Credit	1971	-	-	-	-	-
	1972	-	-	-	-	-
	1973	1	51	14275	-	-
	1974	1	59	47007	39598	-
	1975	1	62	47375	45600	-
	1976	1	62	47375	20100	-
Total	1971	41	3507	3164977	27505032	707291
	1972	67	7602	7696977	39108441	1159035
	1973	87	15142	9033176	50696972	1467261
	1974	104	22269	11409655	76735045	1463554
	1975	115	29999	12318598	72707399	2263418
	1976	115	33096	12427613	35953408	1915663

Decree no. 11618 dated Jan. 4, 1969. This service was entrusted with the primary responsibility of promoting the interests of all types of cooperatives. These responsibilities have been transferred to the General Directorate of Cooperatives within the Ministry of Housing and Cooperatives pursuant to law no. 73/9 issued on Jan. 31, 1973. The consumers cooperatives have progressed because of the loans they secured from the State Treasury advances via the National Union for Cooperative Credit. These societies gradually included the labor syndicates and their respective federations and the various popular groups of limited income. These societies provided their members with consumer goods at low and just prices. It is worth noting that they have also marketed some of the agricultural produce of agricultural cooperatives. The trend of the development of consumer cooperatives is reflected in Table 2.5.

At the present time the number of employees in these cooperatives is 345. Their wages total about 1 million L.L., although many of these societies started operations towards the end of 1974. The increase in the volume of working funds enabled the consumer cooperatives to assume an important position within the distribution channels of food commodities and consumer's goods. They purchased food commodities from the agents and the producers and sold them to the members at cost price which covered the administrative expenses involved.

These cooperatives represent a new competitive force since they do not operate for profit. Accordingly, they have constrained a greater increase in prices and

contributed to some extent to price stability. This resulted in the wide spread of the societies' benefits not only among their members but among the rest of the citizens as well.

c. Cultural, Craft, Savings and Credit Cooperatives in Lebanon: Their Evolution During the Period, 1971-1976

Up to the year 1974, the cooperative movement in Lebanon was limited in scope to the agricultural and consumers' sectors. Only minor progress had occurred in the organization of cultural, craft, savings and credit cooperatives, inspite of the economic and social benefits of such societies.

Cultural Cooperatives

In 1971, there existed only one cultural cooperative. It had 14 members, a share capital of 560 L.L. and working and reserve funds in the magnitude of 11,776 L.L. and 2,657 L.L., respectively.

The number of cultural cooperatives increased to two in 1973. Likewise, the members increased to 22, the share capital to 29160 L.L., the working funds to 36,600 L.L. and the reserve funds to 3,950 L.L.

A year later (in 1974), the number of cultural cooperatives mounted to three, the membership to 40, but the share capital decreased to 24,450 L.L., the working funds to 28,619 L.L. and the reserve funds to 700 L.L.

The number of cultural societies and members thereof remained in 1975 the same (namely, 3 and 40 respectively). The share capital amounted to 27,950 L.L., while the working funds to 33,220 L.L. and the reserve funds to 1,150 L.L.

But, in 1976, the working funds diminished to a level of 15,622 L.L. and the reserve funds to 800 L.L.

The progress of cooperative societies in the cultural sector, will undoubtedly, give the intellectuals opportunities for deriving material benefits from their intellectual output by reducing the costs of printing and publication which currently take away most of the sale proceeds from books. Simultaneously, the cooperative venture will make it possible for students and seekers of knowledge and culture to secure books at more convenient prices.

Craft Cooperatives

The first craft cooperative society was founded in 1973. Its members numbered 15, while its share capital amounted to 1900 L.L. A year later, this society had 32,000 L.L. in working funds and 800 L.L. in reserve.

By 1975 there were 3 craft cooperatives encompassing 36 members and having share capitals of 2900 L.L., working funds in the magnitude of 35,000 L.L. in addition to 1200 L.L. in reserve funds.

However, the volume of funds in circulation diminished in 1976 to a level of 28,000 L.L. Similarly, the reserve funds decreased to a level of 1000 L.L.

The cooperative can play a major role in the modernization and development of crafts by enabling the craftsmen to secure

the modern means of production such as machines and tools which lead to both, improved quality and increased production. Furthermore, the craft cooperative will enable the rural people to engage in the production of a variety of non-agricultural goods and, in so doing, multiply the sources of their earnings by undertaking productive activities out of the agricultural seasons.

Savings and Credit Cooperatives

The first savings and credit cooperative dates back to 1973. It encompassed 51 members and had a share capital of 275 L.L. A year later, the membership increased to 59 and the share capital doubled. The volume of working funds in circulation totalled 39,598 L.L.

The year 1975 witnessed further growth. The members reached 62, the share capital 47,375 L.L. and the money in actual circulation 45,600 L.L. These latter funds were, however, diminished by more than 50% in 1976, and amounted to 20,100 L.L.

The savings and credit cooperative societies have a significant developmental role to perform by providing needed loans for their members on convenient terms, thus reducing the burdens which they would, otherwise, have to carry in the form of unnecessary expenses and exorbitant interest rates.

2.7 Agricultural Research

Since research is considered as the primary factor in the development of agriculture, Lebanon has been interested in

promoting agricultural research through various organizations. These include both the public and the private sectors.

Research in the public sector has been conducted mainly by the Agricultural Research Institute of the Ministry of Agriculture. The Institute has several stations and laboratories in the different regions of Lebanon namely Tel Amara, Terbol, Fanar, Abdeh, Tyre and Kfardan. The aim of these research stations is to solve problems facing the Lebanese farmer in the areas of crop production and protection, soils and irrigation, and animal production and protection.

Another public agency which promotes agricultural research is the National Council for Scientific Research (NCSR) which allocates funds for many research projects which are conducted either in the laboratories and fields of the government Agricultural Research Institute or at the various Universities in Lebanon. In addition to the personnel of these institutions, the NCSR has its own research staff who conduct research in the various disciplines of agriculture.

Private research is carried out by the Faculty of Agricultural Sciences (FAS) of the American University of Beirut (AUB). The FAS research program is oriented towards the solution of basic as well as applied problems of agriculture in Lebanon and the Middle East. This is conducted either at the laboratories of the A.U.B. campus or at the Agricultural Research and Education Center (AREC) in the Beqa'a in the areas of crop production and protection, animal production and protection, soils and irrigation, food technology and nutrition and agricultural extension, economics

and rural sociology.

Prior to 1975, the Ford Foundation cooperated with the Agricultural Research Institute in Tel Amara through its Arid Lands Agricultural Development (ALAD) program. Most of their research has centered around cereal and grain legume improvement. The work is carried out now under the newly formed International Center for Agricultural Research in Dry Areas (ICARDA) which is headquartered in Beirut, Lebanon, with field stations in Aleppo, Syria; Tabriz, Iran and the Beqa'a, Lebanon.

2.8 Agricultural Education

Agricultural education in many parts of the world is administered at all levels and covers elementary education, secondary education, college or university education, and adult or extension education. The picture in Lebanon today is very grim in relation to most of the above phases.

2.8.1 Elementary Education

Unfortunately government elementary schools in rural areas do not provide any agricultural subjects for their students. In fact the program is very weak in the biological and applied sciences which fails to acquaint the student with his immediate environment.

2.8.2 Secondary Education

The objective of agricultural education at the secondary school level is to produce technically skilled people in various phases of agriculture. It is referred to in some countries as

Agricultural Vocational Training. There is such a school in Lebanon at the present time (Fanar), but unfortunately graduates of this school have been barely enough to satisfy the needs of the Ministry of Agriculture for such technical help. Other schools are in Abdeh, Ghazir, Tel Amara, which are basically for short term training and demonstration purposes.

2.8.3 College or University Education

There is at present one agricultural private college in Lebanon. This is the Faculty of Agricultural Sciences of the American University of Beirut. This Faculty provides training in both undergraduate and graduate agricultural education. The undergraduate program is of three years' duration (six semesters and two summer sessions) following satisfactory completion of one year of university study in Freshman Science or presentation of the Lebanese Baccalaureate Part II which is required of all Lebanese students. It leads to the Degree of Bachelor of Science in Agriculture and the Diploma of Ingenieur Agricole.

Graduate study has been concentrated thus far on programs for the Master of Science Degree in all the departments of the Faculty of Agricultural Sciences. Two general programs are available: one is research oriented where an acceptable thesis is required in addition to a set of course credits, and the other is a production and management oriented degree with no thesis required. Also a Ph.D. program in Agronomy was authorized several years ago but has not been offered yet.

SECTION THREE

LOSSES IN THE AGRICULTURAL SECTOR AS A RESULT OF THE

1975-76 CONFLICT

It is very difficult to give accurate statistics on the losses in the agriculture sector as a result of the troubles in Lebanon. However, the total losses in this sector have been estimated to be worth 300 million L.L. The damage of the cooperative movement has been estimated at 8.4 million L.L. with 40% losses in the agricultural cooperatives and 60% in the consumer cooperatives (Kubeh, 1977).

Certain aspects of agriculture incurred heavier losses than others. Poultry farms received the most serious blow; about 90% of the farms were damaged to an extent which prevented their utilization. Next in line came the damage to water pumps and other agricultural machinery especially in the Beqa'a plain where a large number of these pumps were either stolen or blown-up. However, since the end of troubles, these two areas have started to build-up again. Poultry production is recovering at a rapid pace and has reached now about 60% of its 1975 level as indicated by several prominent poultry producers in the country.

In the crop production aspect of agriculture, eventhough the losses were less than those of the animal production sector, the recovery is much slower especially where fruit orchards are involved. Orchards located in regions where armed clashes occurred had to be neglected for long periods of time. Consequently, the production of these orchards dropped sharply because of the

lack of proper care and the build-up of pests. Olive groves were the most seriously damaged, and it is estimated that three years of proper care of the trees are needed before they go back to their original level of production.

The most serious problem facing all sectors of agriculture in Lebanon at present is the severe shortage of labor at all levels of training. With the extended civil strife and the uncertainty of the future, many agricultural workers left their jobs and moved to neighbouring countries where job opportunities are increasing constantly. A solution to this problem is not easy. At the same time, labor cost has increased sharply in the last two years which in turn is reflecting on the increase in prices of agricultural products.

SECTION FOUR

THE ROLE OF AGRICULTURE IN FUTURE DEVELOPMENT

4.1 Contribution of Agriculture to Economic Growth

The agriculture sector could contribute to economic growth in several ways:

Increase food supplies, release labor to industry, provide resources for industrial development, create markets, and increase export earnings.

4.1.1 Increase Food Supplies

An increase in the net output of agriculture itself represents a rise in a country's gross national product. A marked advance of food supplies is central in the chain of economic development.

A rapid growth of agricultural productivity is important as it enables food supplies to be available at relatively lower prices. The non-agricultural sector then requires less of its income to purchase food, so increasing the effective demand for the output of the non-agricultural sector. This in turn increases the profitability of an expanded output in the non-agricultural sector and encourages entrepreneurs to invest there. Concurrently, expansion of the non-agricultural sector will increase the availability of job opportunities in that sector, both for the urban population and the labor released from rural areas.

4.1.2 Release Labor to Industry

Industrial development requires a substantial and steady increase in manpower to facilitate expansion of output.

There are three potential sources of this increased labor for the industrial sector: natural population increase, immigration, farm population.

Agriculture will be able to release labor for employment in other sectors of the economy if there is underemployment in agriculture or when improved productivity brings about a structural shift in the kind and quality of resources used.

The release of labor stems from two sources: First, the natural increase in farm population is usually greater than that of the non-farm population, allowing a continuing outflow even with a constant farm population.

Second, normally in the later stages of development, increasing labor productivity in agriculture enables an absolute decrease in agricultural employment. The release of workers from agriculture represents a significant human capital contribution to the industrial sector as the bulk of the migrants will be already educated.

4.1.3. Increase Capital Formation

Release of labor from the agricultural sector is one structural shift in the economy which enhances development, but economic growth cannot proceed rapidly without industrial capital-machinery, plant and transportation facilities.

Agriculture makes an important contribution in permitting the formation of capital, especially in the early stages of development when agriculture produces and receives a major share of national income.

There are three ways in which the farm sector contributes to industrial capital formation.

First, increased agricultural productivity benefits the non-agricultural sector through lower food prices, enlarging its real income and so providing the means for increased saving and capital accumulation in the urban sector.

Secondly, increased output may generate higher levels of farm income, part of which may be saved. These savings may be utilized in financing the growth of the non-agricultural sectors.

In generating growth it must be emphasized that it is not sufficient merely to have large agricultural savings. In addition, transfer mechanisms must be available to facilitate inter-sectoral capital flows.

Similarly the existence of a class of capitalist entrepreneurs sensitive to investment opportunities cannot be assumed. Whilst such a class did exist in Lebanon before the war it may take some time for such entrepreneurs to develop in present, prevailing conditions in the country.

The major problem facing Lebanon is to use agriculture to make a significant contribution towards industrial capital accumulation without simultaneously hindering agricultural development. (Some of the problems in the Soviet and Chinese agricultures may be due to too rapid diversion of agricultural resources to the non-farm sectors). This is a question for the Government of Lebanon to decide as to how much they would like to use and exploit agriculture in order to redevelop and reconstruct the industrial sector which has been gravely damaged by the war.

The difficulties of capital formation may be mitigated in Lebanon if they are allowed access to the capital markets of the advanced countries, and if foreign companies were encouraged to invest here.

4.1.4. Market Contribution

As agriculture progresses to one producing predominantly cash crops it provides opportunities for the emergence of other sectors. There are two aspects to this "marketization" of the economy.

First, increases in agricultural productivity which result in higher per capita farm income allow farmers to buy more agricultural inputs and consumer goods from the industrial sector.

The spread of modern technology induces a replacement of traditional means of production which originate within the agricultural sector, for example natural fertilizer and draught animals by chemical fertilizer and tractors.

This sets up a virtuous circle, the improved inputs enhancing productive efficiency in agriculture and so providing increased amounts of marketable agricultural products, over and above the farmers' own requirements, which can be exchanged for goods and services in the industrial sector.

The second element in the market contribution occurs as services such as processing, packing and distribution are developed to process and transmit the marketable agricultural produce to final consumers. This undoubtedly leads to higher employment opportunities which are so badly needed in the rural areas of Lebanon.

4.1.5 Short Term Solutions for Credit, Cooperatives and Extension

- 4.1.5.1 The government in Lebanon must play a leading role in the organization, financing and growth of agricultural credit, as well as in developing ancillary services which enhance the effectiveness of agricultural credit.
- 4.1.5.2 A government-sponsored agricultural credit institution in Lebanon is needed and should be primarily a "public service", an instrument for agricultural development, rather than a banking business enterprise.
- 4.1.5.3 The combination of agricultural credit, cooperatives, marketing and extension services is especially needed in specific rural development projects, such as irrigation, land settlement, land reform, etc.
- 4.1.5.4 Credit does not in itself create new resources. It is not in itself a solution to agricultural problems and a means of rural progress; but it is an important element in an integrated approach, which also covers advisory services for improving production and productivity, marketing, land tenure, farmers' organizations and other aspects. All these elements are interrelated; none of them can produce lasting satisfactory results without being supported by the others.
- 4.1.5.5 The encouragement of savings within the agricultural sector is a vital factor and should therefore be included in any agricultural credit system.

- 4.1.5.6. Other sectors of the economy will compete with agriculture for the use of finance, so that the amount available for agriculture is never unlimited. Agricultural policy, and the funds available, must be considered in the setting of over-all plans.
- 4.1.5.7. The provision of agricultural credit is not an isolated approach to development and welfare but must be considered in relation to the other aspects of agricultural policy, including decisions as to which products should be encouraged, the types of organization which are aimed at in production, processing, marketing, and the provision of other agricultural services.
- 4.1.5.8. Multipurpose cooperatives should be set particularly in the rural areas to serve the isolated farming communities effectively with their diversified range of services.
- 4.1.5.9. An effective extension system must be set up to provide diversified services and advice to the farmers.

4.2. Crop Improvement

Progress in crop production is the outcome of agricultural research. Any change from traditional agriculture to the use of modern technology, requires the implementation of local research findings. In Lebanon, many growers make use of one or two techniques or innovations for the improvement of their farm production, However,

such a practice may not be adequate enough unless we consider all possible agricultural inputs to be utilized as a package for crop improvement. Such a package may include the following components:

4.2.1. New Improved Germplasm

One of the most important criterion in crop improvement is the introduction, selection and breeding of new germplasm which is adapted to local growing conditions - Lebanese growers are currently making use of such new improved crop varieties which have been tested locally. The new wheat variety "Najah" has a grain yield which is 25% more than the local or "Baladi" varieties. In addition, this variety is early maturing, resistant against lodging and shattering and the grains are rich in protein. Another variety which was used recently by farmers is "Mexipak" which is a dwarf wheat, high yielding, rust-resistant and responds well to fertilizers. However, Lebanon's local production of wheat does not satisfy its requirement of grain. Therefore most of the wheat or wheat flour needs have to be imported. Hence crop improvement will remedy this deficit by increasing grain yields. In the case of barley, the newly developed variety "Beecher" proved to give an early high yield with good quality grain which is used for animal and poultry feed. Lebanon has also introduced many new crops into its traditional crop rotation. Farmers are planting sorghum, sweet corn, soybeans, sunflowers, sugarbeets in addition to the many vegetables and fruit trees. As a result, the Lebanese market is supplied all the year with fresh fruits and vegetables of all seasons. Traditional crop exports include apples, citrus and tobacco. Work should be continued on the improvement of these crops.

4.2.2. Use of Fertilizers and Multiple Cropping

In spite of the use of superior germplasm, maximum crop production cannot be attained without the use of fertilizers. Lebanese farmers have realized this fact and are using chemical fertilizers as well as barnyard manure in most of their production areas. Some growers are also using micronutrients particularly in the citrus orchards. Since the prices of fertilizers are steadily increasing, the establishment of fertilizer factories should be encouraged in the country.

Most farmers are still keeping their land fallow in summer with excessive use of tillage practices. It is worthwhile to cut down on the use of cultivation and start practicing minimum tillage or "chemical fallow" by the use of contact herbicides to control weeds. Local research should be encouraged to study the value of multiple cropping so that farmers can plant their lands with two or three crops sequentially during the year with maximum economic returns.

4.2.3. Use of Pesticides

Farmers usually lose 30-50% of their produce due to attacks from insects, disease organisms and weeds. In Lebanon, the use of pesticides is widely practiced, particularly the spraying of insecticides and fungicides. More recently, farmers are realizing the importance of weed control and are starting to

apply herbicides specially in citrus orchards and wheat fields. This modern technology was introduced due to the lack of manual labor and expensive hand weeding. However, farmers should not overuse pesticides or apply them prior to harvesting the produce, in order to avoid contamination of the fresh fruits and vegetables.

4.2.4. New Irrigation Techniques

Water is the major factor limiting agricultural production in Lebanon; Hence the adequate utilization of available water becomes of great importance. In addition to the classical uses of basin and furrow irrigation, farmers have introduced the use of sprinkler irrigation. This system simulates natural rain and economizes on the use of water. Very few progressive farmers have also introduced the use of drip irrigation for growing fruits and vegetables. This system saves on the use of water, and minimizes evaporation losses. Such a system is very useful for the growing of out of season vegetables in plastic greenhouses.

4.2.5. Agricultural Mechanization

Mechanization of agricultural operations is a labor and time saving technology. Many farmers in Lebanon have left their oxen - drawn plows and replaced them with tractor - drawn plows, harrows and cultivators. Some have changed from sowing seeds by hand into the use of planters. Few other mechanized operations like planting potatoes, fertilizer spreading and use of boom sprayers and combine harvesting of grains

came into practice as a result of the establishment of farmer cooperatives or the availability of contractors. What is encouraging about the future of agricultural mechanization in Lebanon is the interest in the local design and manufacturing of small farm equipment. All these mechanized operations help in improving the yield and quality of crops.

Although the package approach is the ideal road to crop improvement, one should not stop agricultural progress if one of the inputs is inadequate or absent. On the contrary, we should try to improve crop production with whatever available components we have, and then try to concentrate our efforts to complete the requirements of the package. In addition, more areas should be opened or reclaimed to increase present crop production. Table 4.1 summarizes the present and potential production picture of the main crops in Lebanon.

4.3. Reforestation

Lebanon has an area of 80,000 hectares of forest and wood lands (FAO production yearbook, 1976). It has been estimated that during the 1975-76 troubles in Lebanon, about 25% of the natural vegetation has been either cut or burned by uncontrolled fires. This has created several problems for which the government and the local communities have to face in the near future. The first outcome of the misuse of our natural resources is the loss of the aesthetic value of our forests which gave Lebanon its natural beauty, and allowed it to be considered as one of the major touristic sites of the Middle East. Since trees help protect

Table 4.1. Present and Potential Production of Main Crops in Lebanon*

Crops	Present yield (mt./ha.)	Potential yield (mt./ha.)	Present crop area (1,000ha.)	Potential crop area (1,000ha.)	Present Production (1,000mt.)	Potential Production (1,000mt.)
Wheat	1.0	3.4	66.5	84	67.8	285
Barley	1.2	3.2	13.4	16	15.8	51
Corn	1.8	6.3	3.0	26	5.2	164
Sorghum	.9	6.3	1.3	24	1.2	151
Legumes for grain	2.1	3.0	13.8	22	29.2	66
Vegetables	11.4	15.0	30.5	40	348.0	600
Fruits	8.7	10.0	74.6	75	650.0	746
Industrial	-	-	13.2	13	-	-
Total crops	-	-	216.0	300 ^a	-	-
Fallow	-	-	56.0	none	-	-
Total	-	-	272.0	300	-	-

^aIncludes 28 from double cropping legumes or corn after wheat.

*Clawson, M., Landsberg, H.H. and L.T. Alexander. The Agricultural potential of the Middle East, American Elsevier Publishing Company, Inc., New York. 1971.

soil from erosion, aid in moisture conservation, provide mild climatic conditions, and produce food and timber, it becomes very obvious that the mutilation of our forestry resources are going to have serious changes in our environment. Since Lebanon is a semi-arid country, such a change could lead to desertification. Therefore, it is extremely important to start planning now a reforestation scheme for the development, management and protection of our vegetation.

The following points should be considered in the planning program:

- a. Local communities should be involved in the project, and should be convinced that such a scheme will have a direct benefit on the lives of the people and their environment.
- b. Nurseries should be established by government agencies close to the planting sites to supply the necessary adapted tree species which can thrive well under the ecological characteristics of the site.
- c. After cleaning the ground in the site, holes are dug and trees are planted before the rainy season at the proper spacing depending on tree species and groundwater tables. Firebreaks should be established at right angles to prevailing winds to cut down on future fire hazards.

- d. Planting field days could be made in the various regions of the country to accelerate the execution of the reforestation scheme. Local volunteers from different organizations such as scouts, youth clubs, schools and universities, professional syndicates, farmer cooperatives and others may help in this useful project.

- e. The government should legislate and implement regulations against cutting trees and starting forest fires.

4.4. Water Resources Development

Due to the population growth, the agricultural production should increase in order to satisfy the needs of the market in the year 2000. The production can be increased by having intensive agriculture (climatic controlled agriculture), and more of the arable land under irrigation. Research has proven beyond any doubt that irrigated agricultural output is higher than the non-irrigated as shown in Table 1. The estimated arable land that needs to be under irrigation should exceed 250,000 hectares which means more than $2000 \times 10^6 \text{ m}^3$ of water should be available annually for irrigation. The Lebanese water resources can supply the above volume of water, if these are properly utilized and managed.

The measures that should be taken to meet the future demand for water can be grouped under short and long term measures.

4.4.1. Short term measures

4.4.1.1. Increase the Onfarm Irrigation Efficiency

With conventional methods (surface irrigation) being used the irrigation efficiency does not exceed 50% and this is mainly due to:

- a. Poor land preparation for surface irrigation:
To overcome the land preparation problems new methods of irrigation should be encouraged and used, such as sprinkler and drip irrigation. The efficiency under these systems ranges

from 75-90% depending on the design and management of the system. These new systems need a high initial investment and in order to encourage farmers to use them, long term loans should be available.

- b. Low cost of irrigation water: The charges for irrigation water on government and private projects is almost negligible. So farmers tend to use more water than needed, thus wasting water and causing drainage problems. To encourage farmers to make better use of water, all water outlets to farmers from private and public projects, should be metered, and if any farmer makes use of more than what is needed for his crop he should be charged at a high price for each extra water unit being used. The quantity needed on each farm can be predetermined according to area of crop, kind of crop and the climatic conditions. The allocation of water and the charges for it (similar to the allocation of electricity) will encourage farmers to select proper irrigation methods.

4.4.1.2. Training or Production Experimental Farms

Training farms should be established in each agricultural zone. These farms should be able:

- a. To train farmers on how to use new techniques to maximize their productions.
- b. To be a source of information to farmers i.e. extension service.
- c. To schedule irrigation as to the quantity needed and time of application; so that proper utilization of water is achieved for maximum crop production.
- d. To select the proper irrigation method for each crop growing in its zone.

4.4.2. Long Term Measures

4.4.2.1. Evaluation of existing irrigation projects

Each of the existing irrigation projects was planned and implemented to meet certain objectives and irrigate a defined area.

An evaluation of these projects is necessary to check if the objectives are met, and the area under irrigation can be increased utilizing the existing volume of water on the project, by using new irrigation methods and techniques.

4.4.2.2. Land Classification - Irrigable Land

The land classification must initially identify the land areas having adequate productivity to warrant consideration of that land for irrigation. The selection of lands for irrigation is a two step process.

- a. Selecting an arable area as guided by farm production economics.
- b. Selecting irrigable area as guided by economics of plan formulation.

The selected arable lands should be adjusted to meet the formulation criteria. In adjusting it the following points should be considered.

- a. The elimination of uneconomic increments such as those that are too costly to serve, drain, or provide distribution network.
- b. Conformance of the land area to the available water supply.
- c. Elimination of areas unable to meet minimal criteria for economic returns under the plan.

Some of the arable land classification is available on project basis. The need is to classify all Lebanese land before the water resources development plan is initiated.

4.4.2.3. Control and Use of Water Resources

- a. Surface Water: The surface water flowing in the Lebanese rivers and from springs constitute 14% of the total precipitation in Lebanon; 80% of this surface water is lost as surface run off to the sea. Development and control of this surface water is necessary. Data on peak and minimum flows, average daily and monthly flows and seasonal flows are required for each river to be developed. According to the analysis of data, dams can be planned to store and/or divert water to where it is needed.

- b. Ground Water: Out of $600 \times 10^6 \text{ m}^3$ of annually recharged underground water, only $160 \times 10^6 \text{ m}^3$ are being used for irrigation and industry. This water resource should be developed to make maximum utilization of the water. Search should be conducted for successful development. The search is for permeable rocks containing sufficient water of usable quality. Geologic studies are of prime importance in ground water exploration, and should be a first step in the prediction of the distribution, depth, thickness and other characteristics of aquifers. Ground water reservoir sites should be selected. These reservoirs provide storage for deep percolation from precipitation and stream flow, and for water artificially recharged in them. Moreover, ground water reservoirs serve as conduits to convey water from areas of recharge to those of production and use.

4.5. Livestock Improvement in Lebanon

It is obvious from import and export figures that the need for animal products in Lebanon has continually been increasing during the last two decades. This increased demand for agricultural products has been met from local production only in the case of poultry meat and eggs. It is interesting to note here that as far as red meats are concerned, Lebanon still imports about 85% of its local needs for this product and in the case of milk and milk products this figure drops to about 70%. In essence, therefore the local production meets the demand only in the case of poultry meat and eggs. The improvement therefore in livestock is absolutely essential if Lebanon is going to reduce its imports of these important agricultural products. There is no question that environmental conditions in Lebanon are very favorable for livestock and poultry production. This factor makes Lebanon somewhat unique in contrast to nearly all other countries in the region who do not enjoy the same favorable climatic conditions as that of Lebanon. Although the compounded feed industry in Lebanon has moved into a very sophisticated and well developed industry which has certainly helped the development of poultry production in the country, the need for locally produced forage and fodder for livestock has not been met; and since this is the key to increased livestock production, it seems that livestock improvement cannot go any further before extensive developments in range management and fodder production in the country. The growing of fodder

crops on irrigated land will involve weighing the long term benefit to be gained from increasing the level of protein intake through increasing livestock production, against the sacrifice of short term, remunerative returns from the growing of alternative cash crops. Feed production is of course not the only factor impeding livestock development in the country. Improved methods of management and disease control are two important and very closely related factors in livestock improvement in Lebanon. These cannot be brought about without the training and education of the livestock producer by the strengthening of technical, advisory, extension and other services required by the producer. One of the most important deficiencies confronting livestock improvement in Lebanon and in the region as a whole is the inadequate number of trained and experienced personnel available at the technical level. The Ministry of Agriculture in Lebanon has a number of responsible positions in the field of animal production and range management.

4.5.1. Solutions for Livestock Improvement in Lebanon

As mentioned earlier, the demand for animal products in Lebanon continues to increase and this has to be met by increased production which will reduce imports and thus improve the balance of payments for the country. There is no one solution for livestock improvement and development but several directions should be taken for that purpose.

- 4.5.1.1. More land should be devoted to feed and fodder production.
- 4.5.1.2. Good breeding stock should be made available to those farmers who have had necessary training and experience in livestock production.
- 4.5.1.3. Agricultural and industrial by-products should be investigated for use as feed sources.
- 4.5.1.4. There should be cooperation between the private and the public sector in planning and execution of all animal production schemes in the country.
- 4.5.1.5. The Ministry of Agriculture should establish animal quarantines in all boarder areas of the country to minimize the spread of disease.
- 4.5.1.6. Adequate slaughter houses should be established in all major cities with these slaughter houses, animal by-product plants and rendering plants, should be constructed for the production of various by-products such as blood meal, meat scraps, bone meal, animal fats, etc.
- 4.5.1.7. Cooperative movements should be established for the production, processing and marketing of animal products.

- 4.5.1.8. One of the most serious problems endangering the livestock and poultry industry is marketing of animal products. This has been the only serious problem as far as poultry meat and eggs are concerned and if milk production is going to be increased in the country, a set up has to be established for collecting, cooling and processing of this milk.
- 4.5.1.9. As the poultry industry picks up in the country and resumes its 1974-75 level of production, serious thinking should be given to the development of poultry processing and marketing centers, poultry by-products processing and possibly egg breaking plants at a later stage. The problem of marketing could become serious enough to justify the establishment of marketing boards for animal products composed of representatives of both the private and the public sector. The objective of these boards is to study both import and export potentials of these products and assist in all marketing aspects both local and foreign.
- 4.5.1.10. Manpower development for agriculture production has been mentioned earlier and cannot be over-emphasized because of the essential backing that this provides for livestock improvement in the country.

4.5.1.11. Financial assistance should be secured from both local and foreign agencies not only for establishing all these public sector activities that had been mentioned but more important to provide credit to livestock producers to enable them to move into greater mechanization in animal production.

4.5.1.12. There needs to be some government inspection of feed mills to see that they satisfy minimum standards of hygiene and safety. The quality of feedstuffs used should be checked and accurate information placed on feed labels. The whole question of government legislation of compounded animal feeds in the country should be evaluated. This is an issue that should be of concern not only to the feed manufacturer and animal producer but also to the consumer of milk, meat and eggs.

Government inspection of animal feeds requires the setting up of a central feed analysis laboratory. This lab should keep a register of all feed manufacturers in the country, collect samples of feeds manufactured from all these plants at intervals and finally run the necessary chemical tests on all these samples collected. All this information should be published in an annual report prepared by such a national laboratory.

4.6. Agricultural Research and Education

Research and education in agriculture are the pillars of agricultural development. They have to be closely associated in any country or region of the world because the teaching of agriculture should be based on research findings in applied agriculture in the region in question.

Agricultural research and education including extension education constitute the foundation for agricultural development. Without these institutions, we can not possibly be able to develop our agriculture in Lebanon. These institutions provide the manpower, the new scientific know how, the auxiliary services, and the techniques for getting information to farmers promptly.

4.6.1. Agricultural Research

Lebanon enjoys three different climatic regions. It has a coastal area that stretches from north to south with a subtropical climate and high precipitation, a mountainous area with a temperate climate and high precipitation and an inland area that is characterized by a continental climate with relatively low precipitation. It is conceivable therefore that Lebanon should develop three agricultural experiment stations, one in each of these areas for carrying out research activities most suitable for these regions. These experiment stations should be

manned by research personnel and should be closely related to the extension services of the Ministry because research findings are of no value if they are not communicated to the farmer and used by him. Agricultural research is currently going on in Lebanon in at least two institutions as pointed out in a previous section, but very little of the results of research are being applied. The Extension services in Lebanon are weak and need to be strengthened. The educational level of extension personnel is low and needs to be raised. Not a single program on TV deals with agriculture or farm life and communication with farmers is practically non-existent.

4.6.2. Agricultural Education

Much of the poverty and disease in our rural areas can be attributed to the failure of our rural people to adopt the lessons of science and apply them to their problems of health and agriculture. Agricultural development can not take place without improvement in the level of education of rural people and those involved in agriculture. The needs of Lebanon for trained people in agriculture are not known and have not been studied. This area has to be studied within an overall plan for agricultural development for the country. There will probably be needed for few Ph.D. level graduates, every year, some M.S. graduates, about a hundred B.S. graduates and thousands of high school and elementary school graduates with some education training

in agriculture. Until the Faculty of Agricultural Sciences develops its own program, Ph.D. training should continue to be done outside Lebanon for several years to come while all the others can be trained in Lebanon.

In a recent report by the Green Plan authorities on agricultural development in Lebanon, it was recommended that the Lebanese Government cooperate at present with the Faculty of Agricultural Sciences at the American University of Beirut to educate each year the needed number of B.S. and M.S. graduates in various specialties needed for the country. We feel that this is a worth while venture and should be pursued. This will save the Lebanese Government substantial amounts of money needed now for the establishment of an Agricultural College at the Lebanese University. The full cost of educating a student in the Faculty of Agricultural Sciences at AUB is now about LL 18,000/year. However, if personnel, funds, and facilities become available in the future, the Lebanese University may develop a faculty of agriculture of its own to serve the needs of the country and the Middle East region.

4.7. Ministry of Agriculture and Autonomous Boards

The Central Administration of the Ministry of Agriculture includes basically all divisions, departments and sections needed for the proper functioning of the Ministry. However, the Ministry faces many problems which hinder its proper functioning.

4.7.1. Problem Areas

4.7.1.1. The image of the Ministry of Agriculture is rather poor mainly because its budget is very low. Furthermore, the Lebanese crisis has added more problems since the Ministry building was completely looted. It is now being housed in temporary quarters and most of the employees are not reporting to work. Repair of the Ministry headquarters is underway.

4.7.1.2. Many positions in the Ministry have been vacant for sometime which has curtailed the proper functioning of the Ministry.

4.7.1.3. The creation of autonomous boards has resulted in duplication of functions between some of these boards and certain divisions within the Ministry. Two examples could be cited: the Animal Production Office and the Division of Animal Resources; the Green Plan and the Forests and Ranges Department.

4.7.1.4. Many staff members of the autonomous boards were originally Ministry employees. The higher salary scale and the more challenging type of work in the autonomous boards has lured them away from the Ministry, which in turn became depleted from qualified personnel.

4.7.1.5. The Extension Department of the Ministry has always been understaffed and thus was never able to function properly. This is a very important Department and has a major role in the development of agriculture in any country.

4.7.2. Proposed Solutions

4.7.2.1. All efforts should be made to increase the budget of the Ministry of Agriculture so as to enable it to play a major role in the development of agriculture specially after the losses this sector has incurred in 1975-76.

4.7.2.2. All vacant positions in the Ministry should be filled with competent personnel.

4.7.2.3. The Extension Department should be strengthened by increasing the number of extension specialists to 70 or 80. These specialists should all be university graduates with specialization in the various disciplines of agriculture.

4.7.2.4. Minor reorganization in the Central Administration of the Ministry is needed such as:
1) creation of a Division of Soils and Water. This is a very important discipline in agriculture, and at present, there is only an Irrigation Section in the Engineering and Rural Industry Department; 2) creation of a Weed Control Section in the Crop Protection Department. This is an important area of plant protection which has been neglected by the Ministry.

4.7.2.5. An evaluation of the nature and functions of the autonomous boards should be undertaken so as to eliminate the duplication in functions that exists at present, as mentioned in section 4.7.1.3. Specific suggestions concerning the autonomous boards could be listed here.

- a. The functions of both the Fruit Office and the Animal Production Office should be changed so as to become strictly marketing boards with greater autonomy and statutory powers.
- b. The function of the Green Plan should be reevaluated even though it is doing a good job at present.

- c. The Agricultural Research Institute should be strengthened by increasing its budget and personnel. It has a big role to play in the development of agriculture. It should also have close ties with the Extension Department.

- d. The silk office could be incorporated in the Rural Industry Section in the Ministry since this section is responsible for encouraging the establishment of agricultural industries in rural areas. Silk production is an integral part of this type of industry and can play an important role in encouraging the farmers to stay in their areas rather than moving to cities.

These are few suggestions which could help in revitalizing the Ministry of Agriculture so that it can play a leading role in rebuilding and developing agriculture in Lebanon.

SECTION FIVE

SUMMARY AND RECOMMENDATIONS

5.1. SUMMARY

The purpose of this paper is to stimulate discussion on areas and issues regarding agricultural development in Lebanon.

Agriculture in Lebanon, although at present, plays a minor role in the economy of the country with an 11% contribution to the overall GNP, can in the future contribute more to the overall economic development of Lebanon.

Lebanon's agriculture can contribute positively to the overall country's drive to economic growth by providing an increasing amount of food supplies, thereby contributing to a reduction in deficits in the balance of payments by saving foreign exchange needed to finance imports of food from abroad. This will also help make Lebanon approach a self-sufficient economy with regard to food.

It is also envisaged that once agriculture is put on a path to a self-sustained development particularly through increased mechanization and technical innovations, labor from the agrarian sector can be released efficiently and effectively to industry and other sectors thereby contributing to national development.

In addition, agriculture in Lebanon can offer more resources for industrial development, an expanded market and the foreign exchange through exports which is so badly needed to finance the country's reconstruction and redevelopment plans.

The civil strife has shaken badly the people and the agriculture of Lebanon. However, although material loss and human life is difficult to calculate since devastation and catastrophe has hit Lebanon to unforeseen and unprecedented proportions, the writers of this paper feel most adamantly that Lebanon can be rebuilt and redeveloped fully since the people of this country are full of optimism, enthusiasm and zeal to improve their living standards. This is probably more true in agriculture and in the rural areas than in other sectors. The rural communities of Lebanon suffer from a lack of general infrastructure. Roads, land fragmentation, medical facilities, education, employment opportunities, credit facilities are all in short supplies thereby accentuating the problem of urbanization as more villagers abandon their homes to come and live in the city. The result is more chaos and social unrest. Urbanization in Lebanon must be checked immediately through the provision of all those facilities that are in short supply in the rural areas. Agricultural cooperatives appear to be some of the main institutions with which the development and reform of the rural areas of Lebanon can be brought about.

The supply of an efficient and adequate credit to agriculture in Lebanon appears to be the most limiting step for development at the present time. An institution of this kind, sponsored by the Government can play a major role in the transformation of Lebanese agriculture.

It cannot be overemphasized that the success of an agricultural credit system in any country largely depends on a positive attitude of the government towards agricultural development and a sound agricultural credit policy. These are particularly important in the gradual transition from subsistence to commercial agriculture which is the critical phase in the process of agricultural development in most newly developing countries. Because agriculture is their preponderant industry, credit to farmers is an important factor which bears upon the extent and pace of the changeover to commercial agriculture. There is great scope here for supervised credit combined with co-operatives and agricultural extension. For successful agricultural development programs, it is imperative that a continuum in agricultural research and education in both the public and private sectors be implemented.

5.2. RECOMMENDATIONS

In view of the foregoing observations, the agricultural economy of Lebanon can be reactivated by:

- 5.2.1. Launching an integrated rural development program through an overall national plan for agricultural development.
- 5.2.2. Improving land tenure systems and conducting land consolidation work.
- 5.2.3. A "Package Deal" approach is desperately needed whereby farmers are provided with all necessary inputs and services for the development of an efficient and effective agricultural enterprise. Marketing boards for specific products should be considered by the Government.

- 5.2.4. A reforestation scheme must be planned for the development, management and protection of our vegetation.
- 5.2.5. A water resource and land capability survey is necessary to maximize utilization of these two basic resources.
- 5.2.6. Ways and means must be found for encouraging farmers to bring new areas under cultivation.
- 5.2.7. More research is needed into methods of agricultural production and water utilization.
- 5.2.8. Integrating and merging major agricultural service institutions into fewer ones.
- 5.2.9. Set up a specialized agricultural credit institution which should be Government sponsored.
- 5.2.10. Multi-Purpose Cooperative Institutions should be introduced in rural areas so that the provision of agricultural inputs and all necessities of life can be accessible.
- 5.2.11. Implementing suggestions on crop improvement listed in section 4.2.
- 5.2.12. Implementing suggestions on livestock improvement listed in section 4.5.
- 5.2.13. Implementing suggestions on the reorganization of the Ministry of Agriculture and the Autonomous Boards listed in section 4.7.

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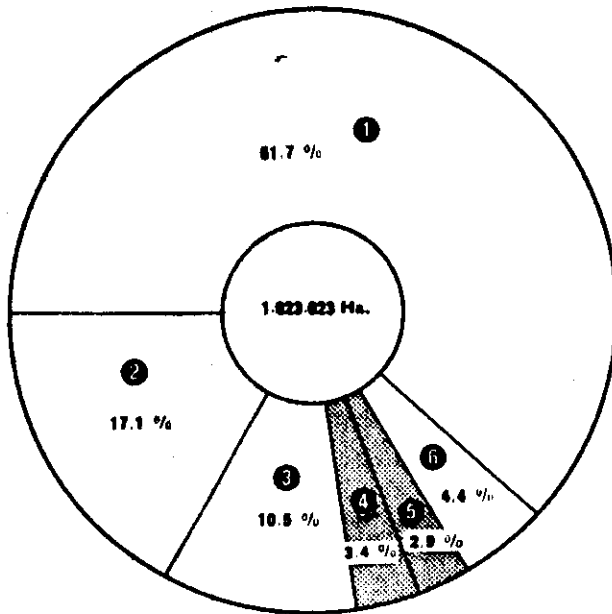
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Appendix I - Distribution of agricultural land according to Mohafazats and Cazas

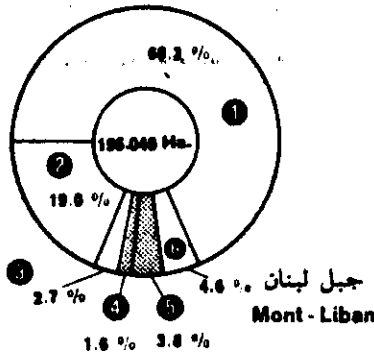
توزيع الاراضي بحسب المحافظات والاقضية وفقاً لنمط الزراعة في سنة ١٩٦٧

REPARTITION DES TERRES PAR MOHAFAZATS ET CAZAS suivant le mode de culture en 1967

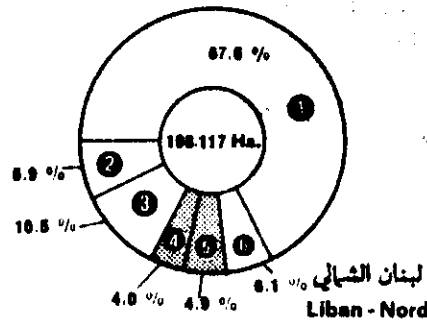


مجموع لبنان
Total Liban

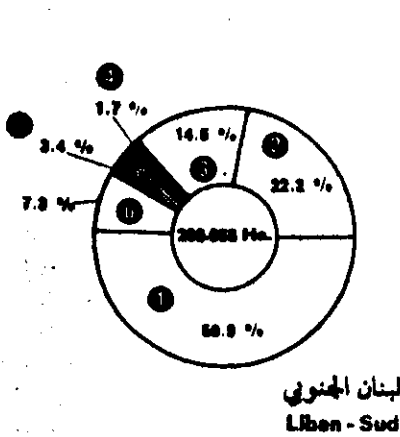
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Terres non agricoles
- ② مستحاثات
Jachères
- ③ بعل سنوية
Annuelles sèches
- ④ مروية سنوية
Annuelles irriguées
- ⑤ مروية دائمة
Pérennes irriguées
- ⑥ بعل دائمة
Pérennes sèches



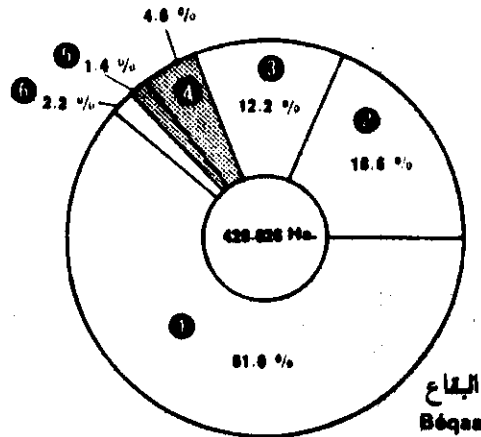
جبل لبنان
Mont - Liban



لبنان الشمالي
Liban - Nord



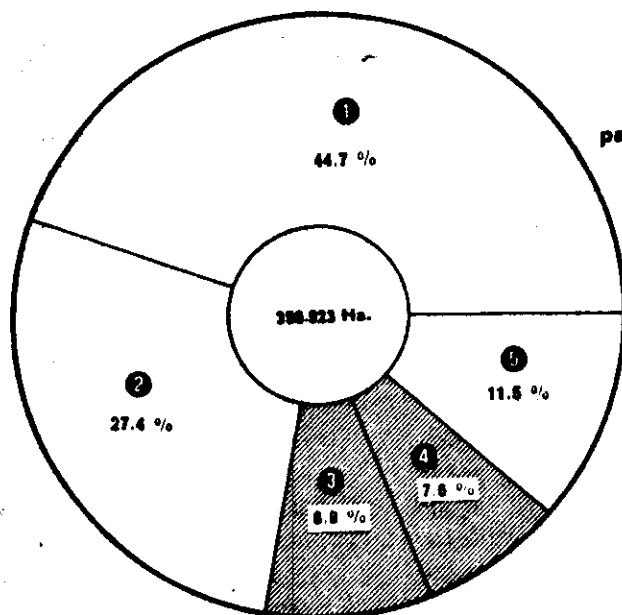
لبنان الجنوبي
Liban - Sud



البقاع
Bqaa

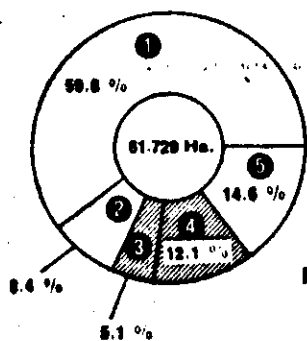
توزيع الاراضي المزروعة وفقاً لنمط الزراعة
وحسب المحافظات في سنة ١٩٦٧

REPARTITION DES TERRES CULTIVEES
par genre de culture et par Mohafazats en 1967

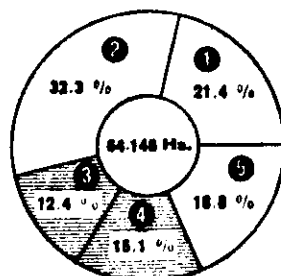


مجموع لبنان
Total Liban

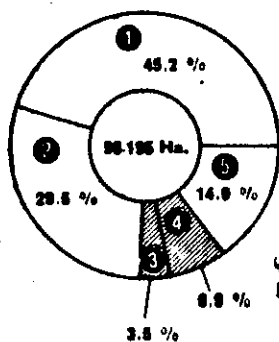
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Jachères
- ② بعل سنوية
Annuelles sèches
- ③ مروية سنوية
Annuelles irriguées
- ④ مروية دائمة
Pérennes irriguées
- ⑤ بعل دائمة
Pérennes sèches



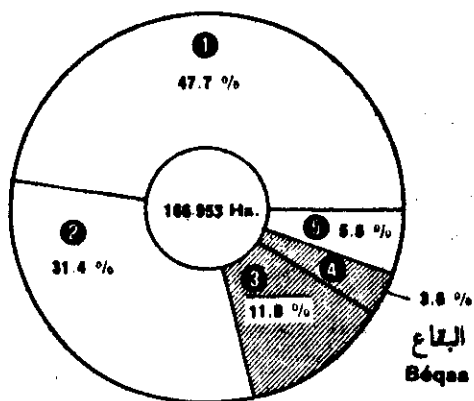
جبل لبنان
Mont - Liban



لبنان الشمالي
Liban - Nord



لبنان الجنوبي
Liban - Sud



البقاع
Béqaa

AGRICULTURE

Répartition des terres par mohafazats et cazas suivant le mode de culture en 1967

En hectares

CAZAS	الزراعات الدائمة Cultures perennes			الزراعات السنوية Cultures annuelles		
	مروية Irriguées	بعل Sèches	المجموع Total	مروية Irriguées	بعل Sèches	المجموع Total
Beyrouth	—	—	—	—	—	—
Mont - Liban						
Baabda	1.142	959	2.101	402	45	447
Metn	1.145	576	1.721	245	126	371
Chouf	1.480	2.720	4.200	684	1.566	2.250
Aley	592	2.593	3.185	175	44	219
Kesrouane	1.819	1.046	2.865	1.155	949	2.104
Jbail	1.226	1.137	2.363	470	2.467	2.937
Total	7.404	9.031	16.435	3.131	5.197	8.328
Liban - Nord						
Tripoli	4.228	2.067	6.295	748	2.571	3.319
Koura	42	4.146	4.188	15	988	1.003
Zgharta	1.354	1.823	3.177	220	692	912
Batroun	398	1.547	1.945	223	910	1.133
Akkar	1.880	1.789	3.669	6.380	15.178	21.558
Bcharré	1.744	685	2.429	404	405	809
Total	9.646	12.057	21.703	7.990	20.744	28.734
Liban - Sud						
Saida	2.464	4.720	7.184	667	3.986	4.653
Nabatie	129	1.172	1.301	210	5.299	5.509
Sour	2.982	1.840	4.822	1.725	4.314	6.039
Bent - Jbail	4	1.155	1.159	1	4.996	4.997
Merjayoun	411	1.410	1.821	471	4.336	4.807
Hasbiya	303	3.430	3.733	223	4.449	4.672
Jezzine	464	903	1.367	119	1.606	1.725
Total	6.757	14.630	21.387	3.416	28.986	32.402
Béqaa						
Zahlé	2.237	3.122	5.359	6.690	8.512	15.202
Béqaa - Ouest	1.057	1.505	2.562	3.434	9.574	13.008
Baalbek	2.421	3.100	5.521	8.398	24.638	33.036
Hermel	210	410	620	1.162	3.556	4.718
Rachaiya	54	1.050	1.104	72	6.087	6.159
Total	5.979	9.187	15.166	19.756	52.367	72.123
Total Général	29.786	44.905	74.591	34.293	107.294	141.587

Source : Ministère de l'Agriculture .

الأراضي الزراعية موزعة بحسب المحافظات والأقضية وفقاً لنمط الزراعة في سنة ١٩٦٧

بالهكتار

متاحلة Jachères	مجموع الأراضي المزروعة Total terres cultivées			أراضي أخرى Autres terres	المساحة الإجمالية Surface totale	الأقضية
	مروية Irriguées	بعل Sèches	المجموع Total			
—	—	—	—	1.780	1.780	بيروت
—	—	—	—	—	—	جبل لبنان
2.138	1.544	3.142	4.688	13.984	18.670	..... بيدا
1.052	1.390	1.754	3.144	23.878	27.020	..... المتن
9.154	2.164	13.440	15.604	30.758	48.362	..... الشوف
8.486	767	11.123	11.890	11.600	23.490	..... عاليه
9.720	2.974	11.715	14.689	25.998	40.687	..... كسروان
6.416	1.696	10.020	11.716	27.095	38.811	..... جبيل
38.968	10.535	51.184	61.728	133.311	195.040	المجموع
—	—	—	—	—	—	لبنان الشمالي
2.414	4.976	7.052	12.028	34.850	46.878	..... طرابلس
1.203	57	6.337	6.394	11.043	17.437	..... الكورة
1.632	1.574	4.147	5.721	12.402	18.123	..... زغرنا
3.483	621	5.940	6.561	22.009	28.570	..... البترون
3.742	8.260	20.709	28.969	42.341	71.310	..... عكار
1.235	2.148	2.325	4.473	11.326	15.799	..... بشري
13.708	17.636	48.510	64.146	133.971	198.117	المجموع
—	—	—	—	—	—	لبنان الجنوبي
7.048	3.131	15.754	18.885	7.916	26.801	..... صيدا
9.273	339	15.744	16.083	10.907	26.990	..... النبطية
7.087	4.707	13.241	17.948	23.562	41.510	..... صور
4.509	5	10.660	10.665	14.893	25.558	..... بنت جبيل
7.334	882	13.080	13.962	17.398	31.360	..... مرجعيون
3.496	526	11.375	11.901	9.979	21.880	..... حاصبيا
5.659	583	8.168	8.751	17.208	25.959	..... جزين
44.408	10.173	88.022	98.195	101.883	200.068	المجموع
—	—	—	—	—	—	البقاع
3.718	8.927	15.352	24.279	17.089	41.368	..... زحلة
4.693	4.491	15.772	20.263	26.462	46.725	..... البقاع الغربي
37.655	10.819	65.393	76.212	141.434	217.646	..... بطبك
21.360	1.372	25.326	26.698	41.485	68.183	..... الهرمل
12.238	126	19.375	19.501	34.605	54.106	..... راشيا
78.664	25.735	141.218	166.953	261.075	428.028	المجموع
174.745	63.979	328.944	390.923	632.100	1.023.023	المجموع العام

المصدر: وزارة الزراعة.

Superficies cultivées en hectares suivant la culture de 1964 à 1973

CULTURES	1964	1965	1966	1967	1968
Céréales					
Blé	70.000	78.400	68.079	66.522	68.061
Sorgho	1.200	1.400	1.456	1.267	13.463
Maïs	5.500	4.900	4.753	2.951	3.026
Orge	15.000	13.500	14.136	13.396	1.164
Total	91.700	98.200	88.424	84.136	85.704
Légumineuses					
Haricots	2.200	2.500	2.450	1.117	1.163
Fèves	1.300	1.500	1.485	631	667
Lentilles	2.850	2.760	4.554	2.858	2.857
Pois chiches	1.450	1.620	3.324	2.885	2.967
Petits pois	375	450	490	370	324
Lupin	70	75	75	203	173
Luzerne	200	260	252	246	230
Veaces	4.235	5.150	5.022	5.453	5.605
Total	12.680	14.315	17.662	13.793	13.986
Tubercules et plantes racinées					
Pommes de terre	8.000	4.460	6.207	6.889	7.721
Oignons	1.000	2.250	2.610	3.018	3.140
Ail	250	310	316	569	635
Total	9.250	7.020	9.133	10.476	11.496
Cultures industrielles					
Canne à sucre	50	25	25	8	9
Betterave à sucre	1.800	1.500	2.000	2.100	2.499
Tabac	6.750	6.550	6.603	6.778	7.183
Arachide soudanaise	3.000	2.400	2.520	2.528	2.825
Sésame	150	150	150	146	138
Anis	50	50	50	30	20
Tournesol	—	—	83	1.494	2.888
Mûriers	—	—	—	—	—
Autres cultures	—	—	—	128	1.201
Total	11.800	10.675	11.431	13.212	16.763
Légumes à feuilles et à tiges					
Choux et choux - fleurs	1.200	1.450	1.494	2.049	2.063
Laitues	600	500	500	638	670
Epinards	175	175	175	176	159
Bettes	350	350	350	172	161
Total	2.325	2.475	2.519	3.035	3.053

Source : Ministère de l'Agriculture.

المساحات المزروعة بالهكتار حسب نوع الزراعة من 1964 الى 1973

1969	1970	1971	1972	1973	الزراعات
					قمحيات ذات حبوب
43.192	47.582	48.294	50.504	50.126	..... قمح
1.100	1.116	1.404	1.430	1.352	..... ذرة بيضاء
1.229	1.105	1.612	987	1.227	..... ذرة صفراء
8.294	6.506	7.332	7.823	7.332	..... شعير
53.815	56.287	58.542	60.744	60.038	المجموع
					بقريات ذات حبوب
1.369	1.123	1.016	977	908	..... فاصوليا
825	464	542	547	572	..... فول
2.783	2.481	2.584	2.692	3.067	..... عدس
2.747	2.321	2.050	2.545	2.789	..... حمص
265	212	175	177	161	..... بازلاء
188	183	168	187	194	..... ترمس
210	235	235	240	248	..... لفتة
5.277	5.540	5.578	6.107	6.088	..... بالية وكركنة
13.454	12.559	12.347	13.472	14.007	المجموع
					درنيات ولبانات جذرية
9.009	8.922	9.054	9.166	8.891	..... بطاطا
1.870	1.738	1.836	1.636	1.510	..... بصل
630	482	527	356	338	..... ثوم
11.509	11.142	11.417	11.158	10.739	المجموع
					مزروعات صناعية
11	—	—	—	—	..... قصب السكر
2.200	2.112	2.761	3.800	2.516	..... شندر سكري
6.633	8.078	7.614	7.778	7.509	..... تبغ
3.106	3.268	3.399	3.294	3.461	..... فستق سوداني
110	134	140	140	125	..... سمسم
—	—	—	—	—	..... يانسون
4.632	4.108	5.510	5.554	5.420	..... دوار الشمس
—	—	—	—	140	..... توت الحرير
1.135	913	1.100	1.050	980	..... زراعات اخرى
17.826	18.613	20.514	21.616	20.150	المجموع
					خضار ذات اوراق وسوي
2.175	1.662	1.563	1.497	1.622	..... ملفوف وقرنبيط
745	760	947	942	877	..... خس
180	164	209	209	228	..... سبانخ
173	106	126	138	123	..... سلق
3.273	2.692	2.845	2.786	2.848	المجموع

المصدر : وزارة الزراعة .

AGRICULTURE

Superficies cultivées en hectares suivant la culture de 1964 à 1973 (Suite et fin)

CULTURES	1964	1965	1966	1967	1968
Légumes à racines					
Carottes	900	900	1.200	567	554
Radis	225	225	230	190	184
Navets	115	115	115	159	148
Colocasses	60	60	60	52	75
Total	1.300	1.300	1.605	968	961
Légumineuses destinées à l'alimentation					
Haricots verts	1.125	998	1.018	1.444	1.505
Fèves vertes	1.200	1.350	1.364	1.260	1.395
Total	2.325	2.348	2.382	2.704	2.900
Légumes à fleurs et fruits					
Pastèques	3.200	3.150	2.677	2.015	1.904
Melons	350	375	390	236	208
Courgettes	1.350	1.160	1.090	988	1.000
Concombres	3.700	3.200	3.232	2.550	2.576
Aubergines	1.600	1.750	1.715	1.526	1.555
Cornes grecques	350	350	350	725	682
Tomates	2.940	4.290	4.633	4.489	4.918
Artichauts	125	50	50	45	45
Total	13.615	14.325	14.137	12.574	12.890
Cultures fruitières					
Agrumes	10.016	12.200	12.300	11.028	11.008
Pommes	11.438	10.980	10.960	10.850	11.322
Poires	1.085	850	859	945	1.079
Coings	240	240	240	221	102
Nâfles	270	250	250	184	158
Abricots	1.030	945	925	1.188	1.768
Cerises	505	460	474	1.842	1.853
Pêches	560	510	551	727	487
Prunes	300	275	278	365	353
Figues	3.500	3.140	1.900	1.507	1.508
Grenades	140	120	120	277	277
Fraises	110	110	110	96	100
Amandes	1.100	1.880	1.893	515	515
Noix	70	90	90	68	68
Pin en production .....	...	...	...	...	...
Bananes	3.350	2.527	2.542	2.457	2.452
Raisins	23.847	23.847	14.664	15.223	15.343
Olives (1)	28.618	26.618	26.965	26.837	26.863
Total	88.179	85.022	75.221	74.328	75.254

Source : Ministère de l'Agriculture. (1) En Production : 28250 hectares .

المساحات المزروعة بالمكثار حسب نوع الزراعة من 1964 الى 1973 (تابع ونهاية)

1969	1970	1971	1972	1973	الزراعات
					حاصل ذات جنود
618	734	703	609	646	..... جزر
210	269	270	274	290	..... فجل
138	212	188	169	160	..... لبت
85	54	56	54	58	..... بلقاس
1.051	1.269	1.217	1.106	1.154	المجموع
					الربيات معدة للتربية
1.623	1.994	1.917	1.854	1.637	..... لوبيا خضراء
1.251	1.233	1.071	1.236	1.312	..... فول اخضر
2.874	3.227	2.988	3.090	2.950	المجموع
					حاصل ذات اوراق وانحار
2.047	2.000	2.264	2.661	2.805	..... بطيخ احمر
225	200	167	183	201	..... شمام
1.110	917	830	773	755	..... كوسا
2.685	2.400	2.920	3.033	3.065	..... خيار ومشي
1.744	1.361	1.350	1.284	1.223	..... بادنجان
830	872	686	687	614	..... باميه
5.707	4.938	4.873	4.568	4.359	..... بندوره
45	41	46	46	51	..... عرشوف (أرضي شوكة)
14.393	12.729	13.136	13.235	12.873	المجموع
					زراعة الانحار
11.333	11.767	11.865	11.936	11.939	..... حشيشات
14.133	13.017	12.892	12.776	12.291	..... تفاح
1.181	1.315	1.356	1.383	1.412	..... اجاص
127	255	298	299	301	..... سفرجل
161	325	329	331	335	..... آكي دنيا
1.885	2.481	2.559	2.578	2.657	..... شمش
2.001	2.027	2.045	2.081	2.163	..... كرز
576	792	869	921	918	..... دراقن
396	495	511	526	804	..... نخوخ وجنارك
1.520	1.378	1.378	1.379	1.367	..... تين
279	378	380	380	381	..... رمان
104	93	98	101	130	..... فريز
567	919	960	997	1.127	..... لوز
684	85	85	85	86	..... جوز
...	...	...	...	10.000	..... صنوبر مشوي
2.452	2.418	2.420	2.423	2.660	..... موز
16.556	16.855	17.754	17.798	18.157	..... حب
27.663	27.066	27.518	28.021	30.160	..... زيتون (1)
81.617	81.664	83.317	83.995	86.888	المجموع

المصدر : وزارة الزراعة . (1) المساحة المنتجة : 28250 هكتار .

AGRICULTURE

Production en tonnes de 1964 à 1973

CULTURES	1964	1965	1966	1967	1968
Céréales					
Blé	59.500	55.000	69.992	67.690	47.673
Sorgho	1.450	2.240	1.412	1.180	355
Mais	11.000	9.065	8.841	5.185	3.727
Orge	15.000	12.600	12.723	15.746	11.567
Légumineuses					
Haricots	3.000	3.400	3.430	1.620	1.547
Fèves	1.180	1.500	1.559	976	734
Lentilles	3.400	3.250	1.822	2.779	1.107
Pois chiches	1.400	1.350	2.360	3.311	1.661
Petits pois secs	400	675	784	805	311
Lupin	75	75	50	185	135
Luzerne	6.000	15.600	15.120	14.560	12.359
Veaces	4.050	4.350	3.040	5.132	2.496
Tubercules et plantes racinées					
Pommes de terre	80.000	53.640	79.080	80.945	77.616
Oignons	24.000	25.875	32.364	43.978	37.811
Ail	2.600	2.500	2.465	3.723	2.890
Cultures industrielles					
Canne à sucre	2.000	841	838	195	228
Betterave à sucre brut	77.000	73.770	100.000	110.000	118.952
Betterave à sucre épluchée (1)	—	—	—	—	—
Tabac	6.000	5.764	6.250	6.378	6.602
Arachide soudanaise	5.000	5.201	4.108	3.239	3.302
Sésame	140	150	150	109	97
Anis	50	50	50	27	26
Tournesol	—	—	44	530	1.675
Autres cultures	—	—	—	96	103
Légumes à feuilles et à tiges					
Choux et choux - fleurs	22.700	19.600	20.916	28.796	28.502
Laitues	12.000	10.500	10.500	13.340	11.456
Épinards	2.800	2.800	2.800	1.716	941
Bettes	5.200	5.000	5.250	2.762	1.886

Source : Ministère de l'Agriculture. (1) En 1973 production en baisse due à la sécheresse.

التزراعة

الانتاج بالاطنان من ١٩٦٤ الى ١٩٧٣

1969	1970	1971	1972	1973	الزراعات
					مجموعات ذات حبوب
32.956	43.005	40.971	63.688	55.138	..... قمح
611	687	831	918	898	..... ذرة بيضاء
1.111	1.122	1.246	1.019	891	..... ذرة صفراء
6.750	5.878	6.308	7.554	6.511	..... شعير
					مجموعات ذات حبوب
1.699	1.588	1.259	1.213	861	..... فاصوليا
567	478	547	537	667	..... فول
2.131	2.138	1.972	2.163	1.232	..... عدس
1.671	1.602	1.460	2.013	1.866	..... حمص
258	227	164	187	142	..... بازلاء يابسة
103	116	110	137	165	..... بوس
10.375	12.739	13.320	13.521	10.784	..... فاصوليا خضراء العلف
3.572	4.833	4.073	4.725	5.818	..... بالة كرت حبوب
					درجات ونباتات جلوية
86.609	93.187	108.774	116.507	116.236	..... بطاطا
29.977	35.603	35.568	29.521	31.203	..... بصل
2.851	2.426	2.954	1.721	1.638	..... ثوم
					مزروعات صناعية
262	—	—	—	—	..... تصدير السكر
94.000	100.366	146.181	190.000	139.431	..... شندر سكري قبل التجريم
—	—	—	—	112.000	..... شندر سكري بعد التجريم (١)
6.652	7.190	8.397	9.513	9.876	..... تبغ
3.351	3.788	4.110	4.247	4.840	..... قطن سوداني
80	112	105	124	105	..... قطن
—	—	—	—	—	..... يانسون
2.538	1.572	2.589	2.416	665	..... دوار الشمس
—	—	—	—	—	..... زراعات اخرى
					مجموعات اوراق وسوق
29.835	26.255	26.746	18.422	16.159	..... ملفوف وقرنيط
16.330	18.433	22.801	23.143	18.110	..... نخس
1.216	1.213	1.653	1.703	1.810	..... سبانخ
1.861	1.239	1.368	1.581	1.315	..... سلق

المصدر : وزارة الزراعة . (١) - انتاج منخفض في سنة ١٩٧٣ بسبب الجفاف .

Production en tonnes de 1964 à 1973 (Suite et fin)

CULTURES	1964	1965	1966	1967	1968
Légumes à racines					
Carottes	5.500	5.700	12.000	12.488	10.516
Radis	3.900	3.900	3.680	3.603	2.702
Navets	2.900	2.900	3.450	2.704	2.358
Colocasses	750	750	720	520	1.400
Légumineuses destinées à l'alimentation					
Haricots verts	4.600	4.500	4.958	6.260	6.304
Fèves vertes	6.000	10.800	8.184	10.448	5.091
Légumes à fleurs et fruits					
Pastèques	27.300	32.500	15.205	18.737	15.030
Melons	3.200	3.500	2.925	1.869	896
Courgettes	15.700	13.500	7.445	8.025	9.332
Concombres	18.900	18.500	20.656	21.904	30.016
Aubergines	29.000	25.000	25.108	19.848	23.407
Cornes grecques	800	770	1.225	2.173	1.065
Tomates	41.770	45.300	53.789	59.176	59.510
Artichauts	3.300	750	800	720	518
Cultures fruitières					
Oranges	145.000	148.556	163.900	153.848	161.093
Citrons	65.000	69.000	68.900	56.910	59.374
Autres agrumes } Mandarines	15.000	14.000	17.140	17.376	18.276
} Pamplemousse					
Pommes	125.000	115.080	104.010	157.021	162.907
Poires	14.000	5.100	5.386	11.272	16.212
Coings	2.000	1.750	1.080	1.520	2.229
Néflas	5.000	4.500	5.000	4.605	6.953
Abricots	12.500	10.600	10.915	8.120	24.503
Cerises	6.500	6.900	4.313	10.010	15.099
Pêches	11.000	9.500	5.394	10.041	17.316
Prunes	6.600	5.900	2.997	6.576	10.012
Figues	24.000	21.650	11.685	13.447	13.391
Grenades	1.500	1.400	1.214	4.562	5.727
Fraises	450	450	454	220	453
Amandes	1.800	2.400	2.392	5.948	4.557
Noix	375	450	387	757	952
Graines de pin	190	210	231	235	260
Bananes	22.000	25.340	29.750	27.167	28.526
Raisins	100.000	83.800	75.988	88.321	83.609
Olives	30.000	49.000	29.376	67.773	32.184

Source : Ministère de l'Agriculture .

التزراعة

الانتاج بالاطنان من ١٩٦٤ الى ١٩٧٣ (تابع ونهاية)

1969	1970	1971	1972	1973	الزراعات
					حصاد ذات جلور
12.276	15.335	13.527	10.495	12.566	جزر
3.026	4.042	3.345	3.209	3.332	لبيل
2.134	3.397	2.953	2.487	2.471	لفت
1.605	885	830	862	842	تلفاس
					الربيات معدة للتربية
8.722	12.349	8.000	8.321	6.270	لوبيا خضراء
5.464	6.318	4.507	4.813	3.642	فول اخضر
					حصاد ذات اورال وانمار
19.419	19.691	24.206	33.286	24.286	بطيخ احمر
1.419	1.406	1.155	1.246	1.147	شمام
9.467	9.491	6.678	7.815	7.866	كوسا
28.614	29.909	25.906	27.295	29.827	خيار وسقي
19.720	15.762	18.653	20.866	16.181	بادبجان
1.267	1.565	1.176	1.360	1.386	باميه
70.014	65.713	66.987	72.630	59.127	بنغوره
518	486	591	575	614	خرشوف (أرضي شوكة)
					زراعة الاثمار
147.783	178.950	174.425	183.782	202.604	برتقال
60.744	74.546	81.973	85.729	79.408	ليمون حامض
17.953	18.182	21.980	26.639	24.723	حشيشات اخرى { افندي كريفون
66.547	74.356	154.483	220.417	166.177	تفاح
5.805	9.755	9.500	16.861	12.181	اجاص
1.282	3.034	3.699	4.336	4.671	سفرجل
5.809	5.397	7.115	7.820	7.016	آكي دنيا
11.511	12.952	12.761	18.119	13.495	شمش
8.702	11.733	9.026	12.597	11.767	كرز
7.539	12.114	12.376	16.676	19.415	بدونق
6.712	7.096	7.993	10.198	13.090	لبوخ وجنارك
13.071	10.842	10.826	10.915	8.980	تين
4.710	5.163	7.131	7.625	7.568	رمان
434	426	479	498	608	فريز
2.438	3.521	3.277	4.859	5.181	لوز
612	1.109	992	915	1.152	جوز
273	301	319	346	370	صنوبر
29.361	38.037	38.326	38.722	43.900	موز
76.640	101.753	115.023	109.396	107.490	هندب
46.268	44.396	54.759	39.803	32.250	زيتون

المصدر : وزارة الزراعة .

AGRICULTURE

Rendement en tonnes par hectare de 1964 à 1973

CULTURES	1964	1965	1966	1967	1968
Céréales					
Blé	0,9	0,7	1,0	1,0	0,7
Sorgho	1,2	1,8	0,9	0,9	0,3
Maïs	2,0	1,9	1,8	1,8	1,2
Orge	1,0	0,9	0,9	1,2	0,9
Légumineuses					
Haricots secs	1,4	1,4	1,4	1,5	1,3
Fèves sèches	0,9	1,0	1,0	1,3	1,1
Lentilles sèches	1,2	1,2	0,4	1,0	0,4
Pois chiches	1,0	0,8	0,7	1,2	0,6
Petits pois secs	1,1	1,5	1,0	1,5	0,9
Lupin	1,1	1,0	0,6	0,9	0,8
Luzerne verte	30,0	60,0	60,0	59,3	63,6
Veaces	1,0	0,9	0,6	0,9	0,4
Tubercules et plantes racinées					
Pommes de terre	10,0	12,0	12,7	11,8	10,0
Oignons	24,0	11,5	12,4	14,6	12,3
All	10,4	8,1	7,8	8,5	4,2
Cultures industrielles					
Canne à sucre	40,0	33,6	33,6	25,3	23,8
Betterave à sucre(1)	42,8	49,2	60,0	52,4	47,6
Tabac	0,9	0,9	0,9	0,9	0,9
Arachide soudanaise	1,7	2,2	1,8	1,3	1,2
Sésame	0,9	1,0	1,0	0,8	0,7
Arnis	1,0	1,0	1,0	0,9	1,3
Tournesol	—	—	0,6	0,4	0,6
Autres cultures	—	—	—	—	—
Légumes à feuilles et à tiges					
Choux et choux - fleurs	18,9	13,5	14,0	14,1	13,8
Laitues	20,0	21,0	21,0	20,9	17,1
Épinards	16,0	18,0	16,0	9,7	6,9
Bettes	14,9	14,3	15,0	16,0	10,7

Source : Ministère de l'Agriculture. (1) Brut.

الزراعة

مردود المكنار بالاطنان من ١٩٦٤ الى ١٩٧٣

1969	1970	1971	1972	1973	الزراعات
مبليات ذات حبوب					
0.8	0.9	0.9	1.3	1.1	..... لبح
0.6	0.6	0.8	0.6	0.7	..... ذرة بيضاء
0.9	1.0	0.8	1.0	0.7	..... ذرة صفراء
0.8	0.9	0.9	1.0	0.9	..... شعير
لربيات ذات حبوب					
1.3	1.4	1.2	1.2	0.9	..... فاصوليا يابسة
0.9	1.0	1.0	1.0	1.2	..... فول يابس
0.8	0.9	0.8	0.8	0.4	..... حبس يابس
0.6	0.7	0.6	0.6	0.7	..... حبس
1.0	1.1	0.9	1.0	0.9	..... بازلاء يابسة
0.6	0.6	0.6	0.7	0.8	..... ترس
49.4	54.2	56.1	56.1	43.6	..... فاصوليا خضراء
0.7	0.9	0.7	0.8	1.0	..... باقية وكروت
درليات ونباتات جذرية					
9.6	10.4	12.0	12.7	13.1	..... بطاطا
16.0	20.5	19.4	18.0	20.7	..... بصل
4.5	5.0	5.5	4.8	4.8	..... ثوم
مزروعات صناعية					
23.8	—	—	—	—	..... قصب السكر
42.7	47.5	53.1	50.0	55.4	..... شندر سكري (١)
1.0	0.9	1.1	1.2	1.3	..... تبغ
1.1	1.2	1.2	1.3	1.4	..... فستق سوداني
0.7	0.8	0.7	0.9	0.8	..... سم
—	—	—	—	—	..... يانسون
0.5	0.4	0.5	0.4	0.1	..... دوار الشمس
—	—	—	—	—	..... زراعات اخرى
حطار ذات اورال وسول					
13.7	16.8	17.1	12.9	10.0	..... ملفوف وقرنبيط
21.9	24.3	24.1	24.6	21.4	..... حبس
6.8	7.4	7.9	8.1	8.0	..... سبالغ
10.8	11.6	10.9	11.4	10.7	..... سلق

المصدر : وزارة الزراعة . (١) دون تجريم

AGRICULTURE

Rendement en tonnes par hectare de 1964 à 1973 (Suite et fin)

CULTURES	1964	1965	1966	1967	1968	
Légumes à racines						
Carottes	6,1	6,3	10,0	22,0	19,0	
Radis	17,3	17,3	16,0	19,0	14,7	
Navets	25,2	25,2	30,0	17,0	15,9	
Colocasses	12,5	12,5	12,0	10,0	16,7	
Légumineuses destinées à l'alimentation						
Haricots Verts	4,1	4,5	4,8	4,3	4,2	
Fèves Vertes	5,0	8,0	6,0	8,3	3,6	
Légumes à fleurs et fruits						
Pastèques	8,5	10,3	5,6	8,9	7,9	
Melons	9,1	9,3	7,5	7,9	4,4	
Courgettes	11,6	11,6	6,8	8,1	8,3	
Concombres	5,1	5,2	6,3	8,6	11,6	
Aubergines	18,1	14,3	14,6	13,0	15,0	
Cornes grecques	2,3	2,2	3,5	3,0	1,8	
Tomates	14,2	10,6	11,6	13,2	12,1	
Artichauts	26,4	15,0	16,0	16,0	11,5	
Cultures fruitières						
Agrumes [*] {	1 - Oranges	21,0	19,0	20,3	23,17	24,8
	2 - Mandarines					
	3 - Pamplemousses					
	4 - Citrons					
Pommes	10,9	10,5	9,5	15,8	15,8	
Poires	7,6	6,0	6,2	10,7	9,4	
Coings	8,3	7,3	4,5	10,3	7,8	
Nêfles	18,5	18,0	20,0	12,1	17,2	
Abricots	12,1	11,2	11,8	9,3	11,4	
Cerises	12,9	15,0	9,1	8,8	12,0	
Pêches	19,6	18,6	9,7	11,8	20,7	
Prunes	22,0	21,5	10,7	8,9	11,6	
Figues	6,9	7,0	6,1	7,6	8,3	
Grenades	10,7	11,7	10,1	9,1	13,3	
Fraises	4,1	4,1	4,1	4,6	4,8	
Amandes	1,6	1,3	1,2	6,1	6,3	
Noix	5,3	5,0	4,3	4,2	6,3	
Graines de pin .....	...	...	—	—	...
Bananes	6,6	7,7	11,7	11,0	11,9	
Raisins	4,2	3,8	5,1	5,9	5,8	
Olives	1,1	1,7	1,1	3,0	1,4	

Source : Ministère de l'Agriculture.

Note : Il est tenu compte, dans le calcul des rendements des fruits de la densité des cultures.

* Le chiffre de 1973 englobe le rendement des oranges, mandarines, pamplemousses et citrons, alors que les chiffres précédents n'englobaient que le rendement des oranges seulement.

مردود المكار بالاطنان من ١٩٦٤ الى ١٩٧٣ (تابع ونهاية)

1969	1970	1971	1972	1973	الزراعات
					حصار ذات جلور
19.9	20.9	19.2	17.2	19.5	جزر
14.4	15.2	12.4	11.7	11.5	فجل
15.6	16.0	15.7	14.7	15.4	لفت
18.9	16.5	15.0	15.7	14.6	قلناس
					لربيات معدة للتغذية
5.4	6.2	4.2	4.5	3.8	لوبيا خضراء
4.4	5.1	4.2	3.9	2.8	فول اخضر
					حصار ذات اوراق وثمار
9.5	9.8	10.7	12.5	9.3	بطيخ احمر
6.3	7.0	6.9	6.8	5.7	شمام
8.5	10.3	8.0	10.1	10.4	كوسا
10.7	12.5	8.9	9.0	9.7	خيار ومقي
11.3	11.6	13.8	15.2	13.3	بادنجان
1.5	1.8	1.7	2.0	2.3	بابو
12.3	13.3	13.7	15.9	13.6	بننوره
11.5	11.9	12.8	12.5	12.0	خرشوف (أرضي شوكة)
					زراعة الأثمار
23.9	21.7	24.2	27.4	105.8	1 - برتقال 2 - افندي 3 - كريفون 4 - حامض حماضيات
5.3	6.4	13.6	19.1	15.1	تفاح
3.3	6.8	6.6	11.3	7.9	اجاص
3.9	6.5	8.5	10.2	7.9	سفرجل
15.4	11.1	13.9	14.9	11.4	آكي دنيا
3.9	4.4	5.1	6.7	3.6	شمش
6.2	7.8	5.2	7.0	6.1	كرز
3.3	8.2	6.7	8.8	9.0	دراغن
8.0	7.1	7.2	9.6	8.7	خوخ وجنارك
7.9	6.4	6.5	6.5	5.0	تين
9.8	9.4	13.8	14.5	12.3	رمان
4.1	4.6	4.9	4.9	4.6	فريز
2.7	3.6	2.3	4.4	4.6	لوز
5.2	8.9	5.5	4.8	6.1	جوز
...	...	...	...	0.4	صنوبر قلب
11.9	14.6	15.6	16.7	16.5	موز
5.1	6.3	6.6	6.3	6.1	عنب
2.0	1.8	2.1	1.5	1.1	زيتون

المصدر : وزارة الزراعة .

ملاحظة : اخذت بين الاعتبار كثافة زراعة الأثمار في حساب مردودها .

• يشتمل مردود ١٩٧٣ على البرتقال و الافندي والكريفون والحامض بينما يشتمل مردود السنوات السابقة على البرتقال فقط .

Répartition de la richesse animale par Mohafazats en 1968 et 1969

GENRE	1968				
	جبل لبنان Mont - Liban	لبنان الشمالي Liban - Nord	لبنان الجنوبي Liban - Sud	البقاع Béqaa	مجموع لبنان Total Liban
Vaches laitières					
Moins de 15 mois	2.605	5.787	4.535	2.685	15.612
15 mois et plus	5.875	12.973	5.136	5.536	29.520
Total	8.480	18.760	9.671	8.221	45.132
Autres bovins					
Moins de 15 mois	2.545	6.137	2.589	2.189	13.460
15 mois et plus	893	1.572	421	614	3.500
Total	3.438	7.709	3.010	2.803	16.960
Total bovins	11.918	26.469	21.681	11.024	62.092
Ovins					
Femelles	10.115	27.686	22.080	108.512	168.393
Mâles	8.587	5.220	2.247	15.093	31.147
Total	18.702	32.906	24.327	123.605	199.540
Caprins					
Femelles	49.982	48.864	77.671	115.044	291.561
Mâles	12.783	9.467	19.278	24.221	65.749
Total	62.765	58.331	96.949	139.265	357.310
Poules et poulets					
Pondeuses	1.063.300	303.800	60.800	1.610.000	3.037.900
Poulets à viande	4.590.000	2.700.000	810.000	5.400.000	13.500.000
Total	5.653.300	3.003.800	870.800	7.010.000	16.537.900
Autres animaux					
Porcins	5.969	227	339	7.076	13.611
Chevaux	228	1.179	266	1.271	2.944
Mulets	611	849	480	1.562	3.504
Anes	4.201	8.057	8.382	7.670	28.310
Camélidés	32	114	209	78	433
Lapins	11.351	3.673	2.427	5.891	23.342
Rûches	14.030	10.575	11.042	8.016	43.663

Sources : Ministère de l'Agriculture.

توزيع الثروة الحيوانية بحسب المحافظات لسنتي ١٩٦٨ و ١٩٦٩

1969					النوع
جبل لبنان Mont - Liban	لبنان الشمالي Liban - Nord	لبنان الجنوبي Liban - Sud	البقاع Béqaa	مجموع لبنان Total Liban	
					ابقار حلب
2.629	5.874	4.460	2.811	15.774	..... اقل من ١٥ شهراً
6.038	13.232	5.052	5.713	30.035	..... أكثر من ١٥ شهراً
8.667	19.106	9.512	8.524	45.809	المجموع
					ابقار اخرى
2.463	5.953	2.423	2.248	13.087	..... اقل من ١٥ شهراً
864	1.521	403	643	3.431	..... أكثر من ١٥ شهراً
3.327	7.474	2.826	2.891	16.518	المجموع
11.994	26.580	12.338	11.415	62.327	مجموع الابقار
					اغنام
11.435	28.234	24.950	113.021	177.640	..... اناث
9.741	4.983	2.540	18.000	35.264	..... ذكور
21.176	33.217	27.490	131.021	212.904	المجموع
					ماعز
43.513	49.172	74.568	117.902	285.155	..... اناث
10.878	9.354	18.503	24.148	62.883	..... ذكور
54.391	58.526	93.071	142.050	348.038	المجموع
					دواجن
976.700	244.200	54.400	1.437.900	2.713.200	..... دجاج بيوض
4.867.500	2.950.000	885.000	6.047.500	14.750.000	..... دجاج للحم
5.844.200	3.194.200	939.400	7.485.400	17.463.200	المجموع
					حيوانات اخرى
5.600	260	210	7.300	13.160	..... خنازير
225	1.170	255	1.300	2.950	..... خيول
600	820	475	1.550	3.445	..... بنغال
4.200	7.870	8.300	7.600	24.970	..... حمير
25	100	200	75	400	..... جمال
11.000	3.000	2.000	5.000	21.000	..... ارناب
15.100	10.950	12.200	8.700	46.950	..... قفران نحل

المصدر : وزارة الزراعة .

Répartition de la richesse animale par Mohafazats en 1970 et 1971

GENRE	1970				
	جبل لبنان Mont - Liban	لبنان الشمالي Liban - Nord	لبنان الجنوبي Liban - Sud	البقاع Béqaa	مجموع لبنان Total Liban
Vaches laitières					
Moins de 15 mois	2.709	5.712	5.142	3.195	16.758
15 mois et plus	6.577	12.969	6.043	6.686	32.275
Total	9.286	18.681	11.185	9.881	49.033
Autres bovins					
Moins de 15 mois	2.594	5.681	2.540	2.456	13.271
15 mois et plus	866	1.532	477	889	3.764
Total	3.460	7.213	3.017	3.345	17.036
Total bovins	12.746	25.894	14.202	13.226	66.068
Ovins					
Femelles	19.783	35.733	31.360	120.291	207.167
Mâles	4.213	6.728	7.031	18.465	36.437
Total	23.996	42.461	38.391	138.756	243.604
Caprins					
Femelles	49.732	55.958	79.726	125.784	311.200
Mâles	9.737	9.349	14.705	21.191	54.982
Total	59.469	65.307	94.431	146.975	366.182
Poules et poulets					
Pondeuses	1.083.744	270.936	60.208	1.595.512	3.010.400
Poulets à viande	3.032.500	3.050.000	915.000	6.252.500	15.250.000
Total	4.116.244	3.320.936	975.208	7.848.012	18.260.400
Autres animaux					
Porcins	7.430	325	425	8.312	16.492
Chevaux	442	1.331	630	1.455	3.858
Mulets	895	1.037	840	1.709	4.481
Anes	5.450	6.179	6.226	9.412	27.267
Camélidés	97	140	345	114	696
Lapins	13.457	4.625	6.750	7.120	31.952
Rôches	24.765	13.065	15.903	8.680	62.413

Source : Ministère de l'Agriculture.

التزراعة

توزيع الثروة الحيوانية بحسب المحافظات لسنتي ١٩٧٠ و ١٩٧١

1971					النوع
جبل لبنان Mont - Liban	لبنان الشمالي Liban - Nord	لبنان الجنوبي Liban - Sud	البقاع Békaa	مجموع لبنان Total Liban	
					ابقار حلوب
2.855	6.118	5.577	3.684	18.234	..... اقل من ١٥ شهراً
6.454	12.680	5.820	6.746	31.700	..... أكثر من ١٥ شهراً
9.309	18.798	11.397	10.430	49.934	المجموع
					ابقار اخرى
2.547	5.539	2.399	2.564	13.049	..... اقل من ١٥ شهراً
857	1.501	450	957	3.765	..... أكثر من ١٥ شهراً
3.404	7.040	2.849	3.521	16.814	المجموع
12.713	25.838	14.246	13.951	66.748	مجموع الابقار
					الغنم
19.897	36.837	29.212	121.549	207.495	..... اناث
3.937	6.374	6.652	17.222	34.185	..... ذكور
23.834	43.211	35.870	138.771	241.680	المجموع
					ماعز
46.917	56.889	77.584	123.672	305.042	..... اناث
9.222	9.172	13.319	20.145	51.858	..... ذكور
56.139	66.041	90.903	143.817	356.900	المجموع
					دواجن
1.226.982	306.746	68.166	1.806.390	3.408.284	..... دجاج بيوض
5.222.580	3.165.200	949.560	6.488.660	15.826.000	..... دجاج للحم
6.449.562	3.471.946	1.017.726	8.295.050	19.234.284	المجموع
					حيوانات اخرى
8.061	417	498	8.559	17.535	..... خنازير
442	1.324	643	1.491	3.900	..... خيول
892	1.045	837	1.737	4.511	..... بنغال
5.443	6.278	6.331	9.636	27.688	..... حمير
92	127	312	103	634	..... جمال
12.180	3.279	5.519	5.820	26.798	..... ارانب
25.055	12.737	14.281	9.090	61.163	..... قفران تحمل

المصدر : وزارة الزراعة .

Répartition de la richesse animale par Mohafazats en 1972 et 1973

GENRE	1972				
	جبل لبنان Mont - Liban	لبنان الشمالي Liban - Nord	لبنان الجنوبي Liban - Sud	البقاع Béqaa	مجموع لبنان Total Liban
Vaches laitières					
Moins de 15 mois	3.074	6.228	5.776	3.954	19.032
15 mois et plus	6.448	12.528	5.675	6.785	31.436
Total	9.522	18.756	11.451	10.739	50.468
Vaches de trait					
Femelles .....	...	...	...	...	...
Mâles .....	...	...	...	...	...
Total	...	...	...	...	...
Autres bovins					
Moins de 15 mois	2.514	5.419	2.327	2.643	12.903
15 mois et plus	851	1.481	432	996	3.760
Total	3.365	6.900	2.765	3.636	16.663
Total bovins	12.887	25.656	14.216	14.378	67.131
Ovins					
Femelles	19.441	36.126	27.723	121.761	205.041
Mâles	3.718	6.045	6.154	17.798	33.715
Total	23.159	42.117	33.877	139.549	238.756
Caprins					
Femelles	46.658	56.488	77.062	124.218	304.426
Mâles	8.782	9.090	13.344	18.906	50.122
Total	55.440	65.578	90.406	143.124	354.548
Poules et poulets					
Pondeuses	1.246.720	311.920	69.215	1.835.755	3.463.610
Poulets à viande	5.344.000	3.173.000	918.500	7.264.500	16.700.000
Total	6.590.720	3.284.920	987.715	9.100.255	20.163.610
Autres animaux					
Porcins	8.432	622	511	8.831	18.396
Chevaux	440	1.330	639	1.495	3.904
Mulets	890	1.047	836	1.743	4.516
Anes	5.440	6.269	6.325	9.615	27.649
Camélidés	87	118	308	98	611
Lapins	10.930	2.506	4.496	4.100	22.032
Rûches (Type nouveau)	25.262	12.593	14.755	9.072	61.682
Rûches (Type ancien) .....	...	...	...	...	...

Source : Ministère de l'Agriculture .

الزراعة

توزيع الثروة الحيوانية بحسب المحافظات لسنتي ١٩٧٢ و ١٩٧٣

1973					النوع
جبل لبنان Mont - Liban	لبنان الشمالي Liban - Nord	لبنان الجنوبي Liban - Sud	البقاع Béqaa	مجموع لبنان Total Liban	
2.820	5.917	5.260	3.478	17.475	ابقار حلوب
6.641	12.152	5.254	6.033	30.080	..... اقل من ١٥ شهراً
9.481	18.089	10.514	9.511	47.555	..... أكثر من ١٥ شهراً
					المجموع
2.024	3.735	6.940	1.630	14.329	ابقار للحراثة
879	518	3.556	1.058	6.011	..... اناث
2.903	4.253	10.496	2.688	20.340	..... ذكور
					المجموع
2.640	5.266	1.997	2.277	12.108	ابقار اخرى
877	1.629	369	867	3.742	..... اقل من ١٥ شهراً
3.517	6.895	2.366	3.144	15.922	..... أكثر من ١٥ شهراً
					المجموع
16.881	29.217	23.376	15.343	83.817	مجموع الابقار
20.219	32.513	22.418	119.080	194.230	اغنام
4.090	5.803	4.934	17.399	32.226	..... اناث
24.309	38.316	27.352	136.419	226.456	..... ذكور
					المجموع
45.258	53.664	68.779	116.106	283.807	ماعز
8.431	8.726	11.392	17.687	46.236	..... اناث
53.689	62.390	80.171	133.793	330.043	..... ذكور
					المجموع
1.028.941	257.307	56.893	1.515.823	2.858.964	دواجن
5.445.000	2.805.000	907.500	7.342.500	16.500.000	..... دجاج بيوض
6.473.941	3.062.307	964.393	8.858.323	19.358.964	..... دجاج لحم
					المجموع
8.682	602	622	10.744	20.650	حيوانات اخرى
484	1.237	573	1.405	3.699	..... خنازير
900	1.026	696	1.591	4.213	..... خيول
5.549	6.144	5.181	9.802	26.676	..... بغال
83	114	272	87	562	..... حمير
10.493	2.381	3.064	18.371	34.309	..... جمال
9.114	4.439	6.988	21.612	42.153	..... ارانب
18.149	8.925	7.737	17.834	52.645	..... قفران نحل حديثة
					..... قفران نحل قديمة

المصدر : وزارة الزراعة .

الجمهورية اللبنانية

Republic of Lebanon 29
Office of the Minister of State for Administrative Reform
Center for Public Sector Projects and Studies
(C.P.S.P.S.)

مكتب وزير الدولة لشؤون التنمية الإدارية
مركز مشاريع ودراسات القطاع العام