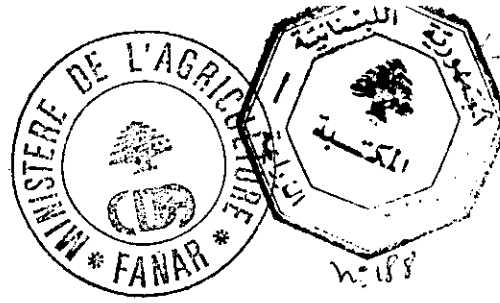


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الجمهورية اللبنانية

مكتب وزير الدولة لشؤون التنمية الإدارية  
مركز مشاريع ودراسات القطاع العام

SUMMARY OF MISSION REPORT AND RECOMMENDATIONS

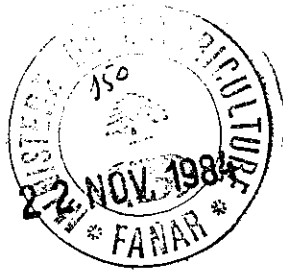
"PRODUCTION AND PROCESSING OF SUGAR BEETS AND  
GOVERNMENT SUGAR BEET PRICE POLICY IN LEBANON"

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

F.A.O./UNDP

Beirut - May-June 1977

MFN= 253



The present summary and recommendations constitute a working document in the terminology of F.A.O. It has been drafted by the Consultant on his own responsibility. It does not therefore engage the responsibility of F.A.O. The latter will subsequently transmit to the Government its recommendations.

## Summary of Mission Report

### Production and Processing of Sugar Beets and Government Sugar Beet Price Policy in Lebanon

1. The cultivation of sugar beets was started in Lebanon on a large scale in the Bekaa Valley, when a processing plant for sugar beets was set up there in 1959. The area cultivated in sugar beets has since fluctuated very much from year to year and has ranged between a minimum of 5,500 dunums in 1959 and 37,000 dunums in 1972. Since it was started, the cultivation of sugar beets has never supplied more than 30% of the sugar consumed in Lebanon, whose volume of approx. 75,000 tons in 1977 is projected to rise to 95,000 tons in 1982. However, if the irrigation projects of the South Bekaa and the Central/North Bekaa are implemented during the next decade, the acreage under sugar beets could reach 60 - 70,000 dunums producing annually 35/40,000 tons of sugar. In fact, the acreage devoted to sugar beets is estimated at 26,000 dunums in 1977, whereas the number of growers is said to be 608. Approximately 86% of these growers cultivate 5-50 dunums of sugar beets, and occupy 54% of the acreage planted in sugar beets. The crop is reported to be occupying between 33 and 43% of the total area of the sugar beet holdings.
2. Ninety-two percent of sugar beet growers in 1977 are ordinary tenants or sharecroppers with short term leases; they operate some 90% of the whole sugar beet acreage, while their leases are for one year or a maximum of two years. They are therefore, inclined to move from one farm to another, in rapid sequence and they only rarely apply a rational rotation of their crops.
3. The advantages to be derived from sugar beet production are numerous; but, because of the unstable pattern of land tenure, which is typical of sugar beet cultivation in Lebanon, the benefits accruing to the national economy have until today remained limited; the cultivation of sugar beets is highly speculative and contrary to the trend in most countries, it is absolutely not integrated to the development of animal production; the total cost of production of Bekaa sugar is moreover very high. The production system which prevails for this crop, reflects faithfully the present pattern of land tenure, which does not incite tenants with short term leases, to improve their irrigation and drainage networks, or to upgrade the other fixed assets, available on their holdings; tenants and sharecroppers are therefore, inclined to minimize their investments and they strive to avoid immobilizing large capital funds in farm buildings, machinery or cattle, etc. On the contrary, they resort for their tillage operations to the services of custom operators; they entrust to large numbers of hired labourers sometimes imported from Syria, all their farm operations from planting of the crop to its harvest.

The traditional irrigation system, based on the flooding of small basins prevails throughout the Bekaa Valley. It prevents moreover any mechanization of farm operations other than tillage operations; yet, with the disappearance

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1. **I.e.** the cost of sugar beets plus the processing cost per ton of refined sugar in the Bekaa.

of cheap farm labour, furrow irrigation or sprinkler irrigation should become the rule, as they would make possible a complete mechanization of agricultural operations and would bring about a notable reduction in farm labour costs. But, in lands operated under tenancy or sharecropping arrangements the instability to land tenure is an obstacle to the medium and long term investments required for the introduction of modern irrigation techniques.

As for the agricultural credit situation, though it has improved since the establishment in 1968 of the cooperative of sugar beet growers which groups nearly all the beet farmers, it is still not satisfactory, and there is ample scope for improvement; it is moreover affected by the pattern of land tenure. Agricultural extension is to all intents inexistent.

4. The principal elements of the cost of production/dunum were in 1977 irrigated land rental (25%), farm labour (30%), agricultural inputs and draught power (40%), and financial and other costs (5%). In other countries, the share of total production costs required for land rental is less important than in Lebanon and it generally does not exceed 12 to 15% of total cost. In 12 years from 1962 to 1974, average cost of production which was of LL 193/dunum has increased to LL 396; it has therefore grown by 100% at a composite rate of 6% per annum<sup>1</sup>; from 1974 to 1977, the growth has been 70% at a composite rate of 20% per annum. In 1977, the average cost/dunum has been estimated at LL 662. It may be noted that the increase of farm labour costs has been particularly rapid from 1974 to 1977; whereas labour costs increased from 1962 to 1974 at a composite rate of 2.5% per annum, this rate moved up between 1974 to 1977 to 25% per annum.

Average yields progressed remarkably between 1962 and 1970, as they moved from 2.4 tons/dunum (18% sugar content) to approx. 5 tons/dunum (14.5% sugar content). But, from 1970 to 1977, average yields have remained stagnant at a level of 5 - 5.3 tons/dunum (14.3% sugar content). Average gross returns/dunum, both under the effect of higher yields and of increased prices/ton of beets moved up from LL 132/dunum in 1962 to LL 380 in 1974, and LL 659.7 in 1977, that is an increase of 190% in 1974 relatively to 1962 and of more than 70% in 1977 relatively to 1974. It may be noted that these figures of gross returns do not include returns from the sale of beet tops; under normal circumstances the returns from beet tops should be added to the returns from the sale of the roots; but, as a result of the quasi inexistence of livestock on beet farms, beet tops are squandered or sold at depressed prices, whereas their value as animal feed can be estimated at between LL 50 to 90 per dunum of sugar beets. Had beet tops been fed to livestock raised on the beet farms, or had they been sold at a price reflecting their value as animal feed, the average cost of production of sugar beets would have been lower by 7 to 14%.

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1. For fur. ref. see Tables 3 and 3a.

Along with farm costs of production, processing costs at the Bekaa Sugar Factory of Lebanon (SFL) plant have risen steeply since 1962; the increase per ton of processed beets was of 50% from 1962 to 1974, at a composite rate of 3.5% per annum; but, from 1974 to 1977 this increase was of 70% at a composite rate of 20%. In 1977, the extraction cost/ton of beets actually incurred by the SFL is estimated at LL 54 per ton of sugar beets at 14.3% sugar content and this assuming a throughput of 140,000 tons of sugar beets. But, an agreement arrived at in August 1977, with the Cereals and Sugar Beets Bureau O.C.B.S., has fixed the cost of processing at LL 50/ton of sugar beets, while assuming provisionally that throughput would be down to 105,000 tons instead of LL 140,000.

Projections<sup>1</sup> for 1982, regarding the future evolution of average farm costs and of processing costs in the Bekaa, show that the chances are that both the latter will increase very much by then; the projections of international prices of sugar indicate on the other hand that price increases of sugar will be far less than those of farm costs and of processing costs. The present margin of approx. LL 750/ton between the price of refined sugar on the Beirut wholesale market, freely imported in Lebanon (LL 1,000/ton)<sup>2</sup> and the support price of Bekaa sugar (LL 1,756/ton)<sup>3</sup> may therefore very well grow. This margin is presently bridged by annual subsidies granted by Government, which for 1977 alone are estimated at LL 10 million; these subsidies are therefore liable to augment considerably by 1982, and by then they could possibly be in the LL 20 million range, and possibly even more.

The present sugar beet policy is restricted to guaranteeing to the sugar beet growers and to the SFL processing plant a support price of Bekaa sugar equal to the sum of the average farm costs/ton of beets and of processing costs/ton of beets. This policy has not aimed at inducing beet growers to improve their farm productivity and lower their costs nor has it helped to entice the SFL to follow a similar route. It has not attempted on the other hand to establish between producers and the management of the processing plant a climate of understanding and mutual confidence; on the contrary, producers still complain of difficulties in the computation of foreign matter, when delivering their beets to the plant. Furthermore, they contest the results of the analyses of the sugar content of their beets and they claim that the sugar yield of the plant is low and that the processing costs are high. As such, this price support policy, presently based only on large annual subsidies, cannot last indefinitely and it deserves being supplemented by measures which would:

- a. Regularize sugar beet production and lift the obstacle to the large scale introduction of modern irrigation techniques (sprinkler, furrow, etc) and to a complete mechanization of farm operations which the prevailing land tenure pattern prevents.

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1. These projections are based on the following assumptions of annual increases:
    - i. low rate (6% farm costs - 4% processing costs)
    - ii. moderate rate (10% farm costs - 8% processing costs)
    - iii. high rate (20% farm costs - 20% processing costs)
  2. Prices prevailing in May-June 1977.
  3. Support price for the 1976/77 sugar crop of the Bekaa.
  4. Sugar yield from beets at 14.3%, sugar content is of 10.4%.

- b. Increase by 1990 the stock of irrigated lands available in the South Bekaa and Central and North Bekaa, such increase taking place by rapid implementation of the South Bekaa and Central North Bekaa irrigation projects.
- c. Bring about a new increase of yields of the sugar beet crop and a notable decrease in farm costs/ton of beets.
- d. Lead within the scope of a national program for livestock development to an integration of sugar beet production to livestock production, and the full utilization of sugar beet by products and in particular sugar beet tops.
- e. Lower processing costs at the SFL plant, and create between the growers and the management of the SFL a climate of confidence and mutual understanding of their respective problems.
- f. Reduce the present financial costs borne by Government and stabilize such costs at a level such that the benefits accruing to the national economy from a price support policy of sugar beets exceed by far its costs.
- g. Which in compensation for the Government's support price policy would ensure to the latter a regular supply of Bekaa sugar at a stable price, whatever be the price of sugar on the Beirut free wholesale market.

## 7. Recommendations

Particular emphasis is laid on recommendation (i) hereunder pertaining to a stabilization of land tenure and to the indexing of farm rentals, which is of paramount importance, since efficient agricultural production is to be the target. If, because of the Lebanese tradition of *laissez faire* in the economic sphere, and because of political expediency, the Lebanese authorities are reluctant to implement this recommendation and to resort to coercitive legislation, then, the implementation of recommendations (ii), (iii), (iv), (v) and (vi) becomes all the more urgent. In the very special socio-economic context of the Lebanon where aggressive entrepreneurship is the rule, the joint implementation of these five recommendations may well suffice to do away with part of the constraints on the present agricultural production system resulting from the unfavourable pattern of land tenure.

### 7.1 Agriculture Recommendations

- i. The Government should consider enacting legislation applicable throughout Lebanon to stabilize the tenure of tenants and sharecroppers in irrigated lands to lower the level of rentals paid and to index rentals to the prices of a number of basic agricultural products or to the cost of living in rural areas; orchards would be exempted from the legislation which would specify that:

all sharecropping arrangements would hereafter be converted into tenancy contracts

all base contracts would hereafter be written and registered and for a minimum duration (for example six or nine years)

tenant farmers would have the right to be compensated by their landowners at the end of their lease for the residual value of the improvements made on leased land

a tenant's legal heirs in case he deceased during his lease would be entitled to take it over until its conclusion

in case of sale of the lease property, tenants would have the right to preempt the leased property

in each region of Lebanon, rentals of irrigated lands would be reduced by 15% and indexed to the prices of a number of basic agricultural commodities or to the cost of living in rural areas, by decision of the provincial governor MOHAFEZ

All conflicts pertaining to tenancy leases would be automatically referred to specially appointed agricultural professional commissions presided by a magistrate and assisted by two representatives of the union of agricultural engineers, by a representative of landowners and by a representative of tenants.

- ii. The Cereals and Sugar beet Bureau O.C.B.S. should consider providing an incentive payment to owner operators and tenants producing beets on a stabilized farm unit, enjoying a three to six year lease and applying a rational crop rotation. In 1977/1978, for example,

operators of stabilized farm units should be guaranteed a basic price of LL 120/ton of beets at 15% sugar content plus an incentive payment of LL 20/ton of beets; other operators should only be guaranteed a price of LL 120/ton of beets at 15% sugar content supervision and control of the distribution of incentive payments should be left to the cooperative of growers, the SFL and a representative of the said O.C.B.S.

- iii. The cooperative of sugar beet growers of the Bekaa should consider renting on a long-term basis and with indexed rentals lands from small, medium size and large land owners who may be enticed to deal with it rather than with private individuals in view of the additional guarantees it may afford to provide to them. Such lands as rented by the cooperative on this basis, would then be turned over and leased on a long term basis to its individual members. The acreage of these stabilized holdings would be of at least 50 dunums; the operators of these holdings would:
  - . apply a consolidated rational crop rotation, inclusive of some forages
  - . introduce modern irrigation techniques and would be fully mechanized using equipment hired from their cooperative or from other cooperatives or from custom operators
  - . gradually undertake livestock production
  - . benefit from medium and short term loans from the cooperative both for agricultural and livestock production
  - . benefit from supervision and advice provided by the cooperative's technical staff and undertake to follow such technical directives as prescribed by the latter
  - . undertake to channel through their cooperative the major part of their various agricultural products within the scope of an orderly cooperative marketing program
- iv. The Government should consider giving top priority to the implementation of the South Bekaa irrigation project which would substantially increase the supply of irrigated lands and which would also improve substantially drainage conditions and therefore facilitate early planting and early harvest; this project would also introduce on a large scale sprinkler irrigation and therefore bring about a complete mechanization of farm operations.
- v. The Government should consider requesting FAO to set up under the joint auspices of the Ministry of Cooperatives, the Sugar Beet growers cooperative of the Bekaa, a two-year integrated sugar beet demonstration and extension project. This project would include:
  - a. furrow irrigation and sprinkler irrigation
  - b. the supply by FAO to the said cooperative of a complete set of farm machinery adapted to the Bekaa environment, so as to mechanize 100% sugar beet cultivation from seed bed preparation and planting to harvest. FAO would supply to the cooperative sprinkler equipment inclusive of the required pumping units for a total of 100 dunums



- c. Demonstration trials would be carried out in five to ten 10-20 dunum plots operated by beet growers who would consent to participate in the project; the cooperative would supply to the participants all the required irrigation equipment and farm machinery in return for the payment of a rental; the latter would be set at an incentive level.
- d. The Green Plan organization would supply on an experimental basis free of charge the necessary equipment for the land levelling required for the introduction of furrow irrigation in 50 dunums, operated by participant growers.
- e. The demonstration extension project would be supervised for two years by the cooperative, assisted by:

One Senior FAO sugar beet extension expert

One FAO technologist specializing in the utilization of farm machinery, for irrigated sugar beets

One FAO technologist specialized in animal nutrition and livestock production

Three full time counterpart specialists, one of which would be an agronomist.

The three counterpart specialists would be recruited by the cooperative and would be paid by the latter, with a three-year grant.

Financing of the project would be ensured for machinery and equipment, FAO expertise, and counterpart staff, through IPF (UNDP) and through the funds accumulated at the Union Nationale du Crédit Coopératif (UNCC), as a result of the distribution of FAO emergency aid to Lebanon.

- f. The sugar beet cooperative would grant to participating farmers medium and short term loans for the building of silos and for fattening of cattle and sheep and sufficient short term credit to cover 75% of farm production costs.
- g. The UNCC, the Green Plan, the Litani Bureau (ONL) and the Department of Irrigation of the Ministry of Hydraulic Resources, the Agricultural Research Institute (INRA), and the Ministry of Agriculture, the Cereals and Sugar Beet Bureau O.C.B.S. and the Sugar Factory of Lebanon S.F.L. and the new Farm Mechanization and Irrigation Cooperative would all be invited to cooperate actively in the project.
- h. The FAO project leader would collect annually all the data necessary for an economic analysis of the impact of the introduction of modern technology on the performance of the participating farms. An FAO farm management consultant, would analyse the data collected at the end of each of the two campaigns.

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1. Potato seeds, fertilizers, insecticides.

- i. FAO at the invitation of the Ministry of Cooperatives would send a two man mission for two weeks to Lebanon as soon as possible to work out a detailed plan of operation. The objective being to start project implementation before the late fall of 1977 and initiate the first trials during the 1978 sugar beet campaign.
- vi. Government should consider entrusting in future the Green Plan organization:
- a. with the supply to interested farmers of the necessary sprinkler equipment for the large scale introduction of sprinkler irrigation, in priority in the South Bekaa. This could be achieved within the scope of an enlarged program of the Green Plan's regular activities at subsidized rates. A decision of the Council of Ministers should be taken to enable the Green Plan to undertake immediately this enlarged program and it should be stipulated that its benefits can be extended not only to owner operators, but also to tenants, sharecroppers, cooperatives and custom operators. The Green Plan should provide to its potential customers the studies for their sprinkler networks, and the credits to purchase from franchised dealers the necessary equipment. The program should be extended in a second phase to the supply of drip irrigation equipment to owner operators of orchards in mountain areas.
  - b. With the supply to interested farmers of the necessary machines (graders, etc., Eversman levellers) for the levelling of their irrigated land and the introduction of furrow irrigation in priority in the South Bekaa, wherever water and soil conditions are suitable. This could be achieved within the Green Plan's existing program of activities at subsidized rates, on the basis of a decision of its Board of Directors.
- vii. The Ministry of Cooperatives and the Union Nationale du Crédit Coopératif U.N.C.C. should make the necessary arrangements with the Cooperative of Beet Growers to provide to it adequate short term and medium term credits to enable it to service fully its members within the scope of a supervised credit scheme. The Bekaa cooperative of sugar beet growers should in consequence consider in future gradually extending its loans to its members so as to include not only loans in kind such as fertilizer but so as to finance prior to the completion of the harvest 75% of the total production costs (inclusive of rentals) incurred per dunum planted in beets; all credit operations would be handled by the counterpart specialists of the cooperative recruited as per (v)e above; such specialists would examine farmers' requests and under the direction of the manager of the cooperative, would supervise and control the use of the loans granted.
- viii. The Government should consider entrusting every year to the Department of Agricultural Economics of the Faculty of Agriculture at A.U.B.<sup>1</sup> with the responsibility of undertaking in cooperation with the cooperative of sugar beet growers a sample survey of costs of production of sugar beet growers<sup>2</sup> similar in scope to that carried out on a random sample of farmers in 1962,

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1. American University of Beirut.

2. Survey of the Agricultural, Industrial, etc. Institute of Rural Economics Op.Cit.

by the Institute of Rural Economics, Beirut. The research project should include the setting up of a farm accountancy system for ten sugar beet farms, and would be funded by the Cereals and Sugar Beet Bureau, O.C.B.S.; participating farmers would only be charged a nominal sum for the services rendered to them.

- ix. The Government should consider requesting the National Institute for Agricultural Research I.R.A.L. to determine:
- a. the water requirements in the Bekaa of sugar beet crops with different irrigation methods (sprinkling, furrow, traditional basin irrigation)
  - b. the yields in the Bekaa of sugar beet roots and sugar beet tops at different epochs of planting and harvesting
  - c. the yields of sugar beet roots and tops, for sugar beets sown in the autumn in the Plain of Akkar, as a follow up to the experimentation already undertaken between 1965 and 1970 in Abdé<sup>1</sup>

## 7.2 Recommendations at the level of processing

- x. The Government should consider one of the following alternatives:
- a. Buying up and retaining 10% of the equity capital of the SFL Bekaa extraction plant, whilst simultaneously providing to the UNCC the necessary financial backing so that the latter is able to purchase on behalf of the Cooperative of Sugar Beet Growers 45% of the said equity capital; the remaining 45% would be retained by the present owners, who would continue to manage the SFL plant, under the supervision of a Board of Directors representing all three groups of shareholders<sup>2</sup>. The present capital of the cooperative would be increased proportionately to the amount of its participation in the SFL while the cooperative would benefit from a long term loan from the UNCC equivalent to the amount paid for the 45% investment in the equity capital of the SFL; the UNCC would hold the SFL shares on behalf of the cooperative.

The Government should simultaneously consider to recruit for a period of three months per annum a qualified processing engineer hired through a F.A.O. He would be assigned to the SFL plant throughout the harvest season and he would be empowered on behalf of the Cereals and Sugar

to settle all disputes and conflicts

- b. Or encouraging the sugar beet growers cooperative to set up a new plant with a 200.000 tons of beet/annum capacity, with the knowledge that the latter would not break even until 1990 when the South Bekaa and Central North Bekaa irrigation projects may have been completed. In this alternative, government would have to subsidize heavily the operations of the new plant throughout the next decade.
- xi. The SFL jointly with the Cooperative of Sugar Beet Growers should consider to:
  - a. Plan together a schedule of deliveries for individual beet growers based on a tight schedule for plantation which would be agreed on with the latter at the time they negotiate with the SFL, their production contracts.
  - b. Supervise and control more effectively the delivery operations and the determination of the foreign matter content of beets, so as to reduce transport costs to the plant and so as to do away with the farmers' complaints that supervision and control of deliveries is left in the hands of a group of SFL employees who on their own initiative harass farmers.
- xii. The SFL should consider upgrading its maintenance so as to reduce repair costs and improving the control of the plants extraction process so as to bring its yields up to higher levels.
- xiii. The Sugar Beet Factory of Lebanon S.F.L. should consider paying an incentive premium of LL 3 per ton of beets to farmers delivering their crop between August 15 and September 5 of each season, so as to encourage early plantation and early harvesting.
- xiv. The SFL should consider improving its marketing department for sugar beet by-products, so as to raise their prices by 20% and thus lower by 8% net processing costs/ton. It should consider selling these by-products to beet growers, through their cooperative on a credit basis, as well as through other cooperatives such as the Anjar dairy cooperative.
- xv. The SFL should consider raising its annual capacity to 300.000 tons of sugar beets as soon as sugar beet acreage reaches 40.000 dunums per annum.
- xvi. The Ministry of Hydraulic and Electric Resources should consider studying within the scope of the Akkar and Bokaiaa plains irrigation feasibility projects the technical and economic feasibility of sugar beet production with processing in a newly established plant in Akkar or with processing at the Tripoli sugar refining factory, and this with due consideration to the results of the field experimentation of sugar beet cultivation in Akkar already undertaken or about to be undertaken as per agricultural recommendation ix(c) mentioned above.

### 7.3 Policy recommendations

- xvii. The Government having made a firm commitment to beet growers in the spring of 1977 should now consider issuing a complementary statement expliciting that this commitment is a firm commitment for the next 5 years and that:
  - a. The support price for Bekaa beets would be reviewed annually and made public no later than November 1st of each year, that is, 4 months before planting takes place.

- b The cost of processing/ton would be reviewed annually and its level fixed no later than August 31st of each year that is 6 months after planting of the crop has taken place.
- c The support price of the relevant Bekaa sugar crop would be reviewed annually and fixed no later than March 1st of each year, that is 4 months after the completion of the harvest of sugar beets
- d During 1978-1982 annual adjustments to the support price of Bekaa sugar beets and Bekaa sugar would reflect 25% of the increases in farm costs and 20% of the increases in processing costs. The remainder of the annual cost increases would not be taken account of for adjustment purposes. It would have to be compensated by reaching within the said period the following targets:

increases in crop yields of 20%

increases in gross returns of 5% in five years through the full utilization of sugar beet by-products in intensive livestock production integrated to beet production within the framework of a national livestock development plan

a reduction in farm labour costs of 50%

a reduction in financing costs of 50%

a productivity increase of 1% at the processing plant through a reduction in labour inputs and annual repair and through an improvement of the extraction rate of sugar and through higher annual throughput.

Assuming a small increase of costs at the farm level of 34.40% from 1977-1982 if 25% of this increase of costs were to be admissible for adjustment purposes this would result in an upward adjustment of the support price of beets totalling 10% at the end of 5 years the remainder of the cost increase i.e. 30% would thus have to be compensated by gains in productivity on the farms. Moreover assuming during the same period a small increase of processing costs of 20% at the plant level if 20% of the increase were admissible for adjustment purposes of the processing cost/ton this would result in an upward adjustment of processing costs of 4% at the end of 5 years but the remainder of the processing cost increases i.e. 16% would thus have to be compensated by productivity increases in the SFL plant. Using available 1977 data the effect of this recommendation would be such that the total adjustment necessary by 1982 in a 1977/1978 support price of Bekaa sugar thus bringing the support price up to

LL 1,860/ton<sup>1</sup>. If the Beirut wholesale market price of refined sugar was by 1982 up to LL 1,300 a ton, this would involve a subsidy/ton of Bekaa refined sugar of LL 560 in 1982, far less than the 1977/1978 subsidy of LL 700/750/ton<sup>2</sup>. But, if world sugar prices were more bullish and the Beirut wholesale price was up to LL 1,800 per ton in 1982, the necessary Bekaa subsidy would only be of LL 60/ton.

- e. Starting in 1983, the support price of Bekaa beets and sugar would be set at a level such that it would only cover the farm costs of reasonably efficient producers using modern agricultural technology, and the processing costs of an efficient extraction plant. Computation of average farm costs would thus be on the basis of an average yield of 6 tons at 15% sugar content with beet tops fed to livestock on the beet farms, and assuming modern irrigation techniques and 100% mechanization. Computation of processing costs would be on the assumption of a high throughput, a high extraction rate, and high returns from the sale of by-products, all of which will be determined by a qualified neutral expert.
- f. The Government would take during 1978-1982 the concrete measures and provide the necessary incentives to help those sugar beet growers desirous of improving their farm productivity, and to ensure an equitable distribution of the benefits accruing from its price support program.

These measures would comprise in particular land tenure legislation, measures to make available irrigation equipment at subsidized rates through the Green Plan and to ensure the availability of agricultural credit training, extension and research, as well as incentives for livestock production related to a national livestock development plan, and finally, measures to facilitate the participation of growers through their cooperative in the equity capital of the Sugar Factory of Lebanon SFL.

1. Estimate of 1982/1983 adjusted support price for Bekaa sugar:

	<u>1977-1978 estimated support Price</u>		<u>1982-1983 adjusted support Price</u> <sup>*</sup>
	<u>LL</u>		<u>LL</u>
9.55 T at LL 124.475 =	1,188.75	9.55 T at LL 136.9 =	1,309.4
per ton at 14.3%		per ton at 14.3% sugar	
sugar content =	477.5	content =	
Processing 9.55 T at		Processing 9.55 T at	
LL 50 per ton		LL 52 per ton	496
Services, sacs, etc. at		Services, sacs, etc.	
LL 45 per ton	<u>45</u>	per ton at LL 55	<u>55</u>
	1,711.-	Support price	1,860.-

\* Assuming an upward adjustment of 1977/1978 farm costs/ton of 10% and an upward adjustment of 4% of 1977/1978 processing costs/ton as per agreement of August 1977. The 1977/1978 support price for beets was LL 130/ton at 15% sugar content; the processing cost/ton arrived at was LL 50/ton of beets.

2. Calculated assuming a Beirut wholesale price of approximately LL 1,000/ton as was the case in early June 1977.

- xviii. The Government should consider the elaboration as soon as possible of a national plan for livestock production integrated to sugar beet production which, while fully taking account of the interests of urban consumers, would nevertheless afford livestock farms the required level of protection against animal products imported at dumping prices, such protection including if necessary, direct supplementary payments to producers.
- xix. The Government should consider imposing an excise tax on Bekaa sugar, whenever the Beirut wholesale price rises above the level of the Bekaa support price. The excise tax would be equivalent to the difference between the Beirut wholesale price, and the said support price; its proceeds should be collected by the Cereals and Sugar Beet Bureau OCBS and should be used for the Bekaa sugar price support program whenever the Beirut wholesale price for refined sugar is lower than the Bekaa support price.
- xx. The Government should consider stabilizing the price of sugar to consumers at a level higher than that prevailing presently on the Beirut wholesale market and closer to the medium term projection of world sugar prices. This stabilization of consumer prices at a higher level would take place by levying higher financial taxes on imported raw and refined sugar. These taxes could yield enough additional financial resources to government to offset the cost of the sugar beet price support program. A higher level of the wholesale price of sugar would not be unfair to consumers since the present very depressed level of international prices of sugar is anyhow not projected to last and prices to consumers will inevitably have to be adjusted upwards.

But, before implementing this recommendation and levying additional taxes on new imports of sugar and therefore raising the Beirut wholesale price, the Government should consider taking adequate measures to prevent windfall profits accruing overnight to a few importers, already holding inside the country sizeable stocks of raw and refined sugar.

Table 1. Number and size of farms and area cultivated in sugar beets in the Bekaa (1977 season).

Size of farm (dunums)	Number of farmers	%	Area cultivated in sugar beets (dunums)	%
5 - 20	215	35	3,426	14
21 - 50	307	51	10,727	40
51 - 200	80	13	7,822	30
200 and above	6	1	4,325	16
	608	100	26,300	100

Source: Sugar beet factory of Lebanon (S.F.L.). The present table has been established on the basis of the contracts finalized between farmers and the S.F.L. by April 1977. In practice, the area actually planted in sugar beets by farmers may exceed that indicated by the contracts by 10 - 15%; moreover, a number of farmers undertake early in the season to supply the S.F.L. with sugar beets and then change their mind and do not fulfill their contractual obligations to plant beets.



Table 2. Quantities and value of fertilizers loaned to members by the Cooperative of Sugar Beet Growers of the Bekaa, 1971-1977.

Year	Composite fertilizer 17/17, 17 Tons	Price per ton LL	Composite fertilizer 15/15/15 Tons	Price per ton LL	Ammonium nitrate 33.5% Tons	Price per ton LL	Net production of sugar beets Tons	Support price/ton of sugar beets(LL)	Tons of beet per ton of sugar extracted	Production of sugar tons
1971-72	191	280	1783	255	1440	225	146131	60 <sup>2</sup>	8.33	17554
1972-73	1596	260	815	240	1827	170	189953	60 <sup>2</sup>	8.33	22741
1973-74	1819	285	-	-	1501	210	111781	60 <sup>2</sup>	8.33	10125
1974-75	366	365	899	340	1701	235	65470	75 <sup>2</sup>	9.29	7196
1975-76	1526	750	132	660	2483	672	159000	117 <sup>*3</sup>	9.70	16100 <sup>*</sup>
1976-77	-	-	-	-	-	-	35426	130 <sup>3</sup>	9.55	3109
1977-78	2195	600	-	-	1985	420	140000	130 <sup>3</sup>	9.55 <sup>**</sup>	14-15000 <sup>**</sup>

1. Source: The Cooperative of Sugar Beet Growers in the Bekaa.

2. 16% sugar content

3. 15% sugar content

\* Because of delays of deliveries at the extraction plant and interruptions due to plant repairs, the producers were unable to deliver all their production of beets.

\*\* ESTIMATE

Table 3. Estimate of costs and returns per dunum of sugar beets (for the years 1962, 1974 and 1977) LL<sup>1</sup>

	1962 Total costs LL	1962 Total costs %	1974 Total costs LL	1974 Total costs %	1977 Total costs LL	1977 Total costs %
Rental costs	56	29	115	30	160	25
<b>Labour costs</b>						
Mixing fertilizers & spreading	2		3		7.50	
Plantation costs	8.7		6		12	
Irrigation costs	13.5		15		37.50	
Hoeing, weeding, thinning, etc	28.3		43		80	
Pest control	0.4		6		10	
Harvesting by hand	24.7		30		50	
<b>TOTAL</b>	<b>78</b>	<b>40</b>	<b>103</b>	<b>25</b>	<b>197</b>	<b>30</b>
<b>Production inputs and draught power</b>						
Seeds	6.4		15		26	
Fertilizer	31.2		90		144	
Transport of fertilizer	0.1		2		5	
Deep ploughing	5.8		5		10	
Superficial ploughing and furrowing	3.8		5		11	
Insecticides and pest control	2.2		19		28.3	
Transport to factory	7.6		20		43.3	
<b>TOTAL</b>	<b>53.2</b>	<b>28</b>	<b>156</b>	<b>40</b>	<b>267.6</b>	<b>40</b>
Financing costs & other miscellaneous costs	6	3	22.5	5	37.4	5
<b>TOTAL COST PER DUN UM (LL)</b>	<b>193</b>	<b>100</b>	<b>396</b>	<b>100</b>	<b>662</b>	<b>100</b>
<b>TOTAL RETURNS</b>						
Estimated production:						
1962	2.4 tons at 18% sugar content/LL 55/ton = LL 132/dunum <sup>2</sup>					
1974	5.07 tons at 14.8% sugar content/LL 75/ton = LL 380/dunum <sup>3</sup>					
1977	5.3 tons/dunum at 14.3% sugar content/LL 124.47/ton = LL 659.71/dunum <sup>4</sup>					

1. Estimate of Ministry of National Economy, 1977 (R. Karaoglan - J. Fuleihan)Op.Cit.

2. To this figure should be added an average return of LL 2.3/dunum for beet tops sold to the owners of sheep flocks.

3. To this figure should be added an average return of LL 8/dunum for beet tops sold to the owners of sheep flocks.

4. To this figure should be added an average return of LL 10/dunum for beet tops sold to the owners of sheep flocks.

Table 4. Costs of production as a percentage of total cost (1962 and 1977).

	1962 LL	% of total costs	1977 LL	% of total costs	1977 % increase over 1962
Total costs	193	100	662	100	243
Rentals	56	29	160	25	190
Labour	78	40	197	30	165
Production inputs & draught power	53.2	28	297.6	40	460
Financing, etc	6	3	37.4	5	520

Table 4a. Annual rate of increase of costs of production (1962-1974 & 1974-1977).

	1962 LL	1974 LL	1977 LL	% increase 1962-1974	% increase 1974-1977	Annual compound rate % 1962-1974	Annual compound rate % 1974-1977
Total costs	193	396	662	100	70	6	20
Rentals and water	56	115	160	100	40	6	12
Labour	78	103	197	33	90	2.5	25
Production inputs & draught power	53.2	156	297.6	200	75	10	21
Financing, etc	6	22.5	37.4	275	63	12	19

Table 5. 1972-1977 sugar beet area cultivated, government subsidy and net margin/dunum<sup>1</sup>.

Year	Area cultivated dunums	Production of sugar tons	Support price/ton of Bekaa sugar LL		Government subsidy/ton of Bekaa sugar (million LL)		Support price/ton of Bekaa beets LL	Approx. net margin over* costs/dunum LL
			per ton	total	per ton	total		
1962/63	9803	3963	510**	-	50	-	59	
1972/73	37000	22941	775	1.72	60	1.72	20	
1973/74	22500	10425	795	0.99	61	0.99	10	
1974/75	13000	7096	1426	5.15	75	5.15	16.75	
1975/76	30000	16300	1500	-	117	-	0	
1976/77	8500	3709	1759	2.5	130	2.5	10-15	
1977/78	26000	14-15000	1755	10.00	130	10.00	0	

1. This table has been established using data obtained from the sugar beet cooperative and data extracted from the following studies:

- For fur. ref. see: a) "Cost of Production of Sugar Beets in Lebanon", R. Karaoglan - J. Fuleihan. Min. of Nat. Econ  
 b) "Cost of Extraction of Refined Sugar from Beets", " " " " Beirut, 1977  
 c) "Cost of Refining Raw Sugar in Lebanon", " " " " " "  
 d. "Sugar Policy in Lebanon".

\* not including the value of tops

\*\* maximum wholesale price of sugar in Lebanon as fixed on January 22, 1962

\*\*\* Estimate based on a projection of costs and of returns/dunum for the 1977 crop.

\*\*\*\* Estimate.

Table 6. Price paid<sup>1</sup> by the Bekaa cooperative for the processing of sugar beets 1962-1977.

Crop	Tons of beets net	Processing price as per agreement		Basis of agreement	Tons of beets needed per ton of sugar extracted	
		Per ton of beets LL	per ton of sugar LL		per ton of sugar	sugar content of beets
1962/63	27000	30*	200*	processing cost assumed by SFL	6.757	18 %
1968/69	80000	21	175	per ton of sugar beets	8.33	16
1969/70	80000	25	208.33	" " "	8.33	16
1970/71	100356	25	208.33	" " "	8.33	16
1971/72	146181	25	208.33	" " "	8.33	16
1972/73	189954	30	250	per ton of sugar refined	8.33	16
1973/74	111781	32.41	270****	" " "	8.33****	16
1974/75	65933	38	353.02	per ton of sugar beets	9.29	14.8
1975/76	159363	36	350	per ton of sugar refined	9.70	14.5
1976/77	35425	55**	525.25	per ton of sugar beets	9.55	14.3
1977/78	140000	54***	515.70****	" " "	9.55	14.3

1. Source: Processing of White Sugar from Sugar Beets. R. Karaoglan and J. Fuleihan. Ministry of National Economy, Beirut. Jan. 26, 1977.

†. Our estimate of the price that would have been paid had the cooperative existed, the estimate is based on 1962 actual costs incurred at SFL and production at a level of 3963 tons of sugar.

\*\* The actual cost incurred by the plant was LL 156.05 (inclusive of a 7% return on equity).

\*\*\* Our estimate on the basis of 1974 and 1975 costs and production at a level of approx. 140000 tons of beets - 70% of capacity.

\*\*\*\* Due to the low sugar content of the beet crop, from which only 10426 tons of sugar were extracted instead of an anticipated 13419 tons, the price per ton of sugar extracted was raised to LL 347.5/ton.

Table 7. Effect in 1977/78 of changes in sugar content of sugar beets, on farmers returns, SFL returns, on the level of price support/ton of sugar, and the total subsidy, assuming different levels of sugar content in the beets, and a uniform loss of sugar of 4% in the extraction process.

tonnage of beets necessary par ton of refined sugar	8.33/t	8.77/t	9/t	9/55/t
% sugar content in sugar beets	16	15.4	15.1	14.3
extraction rate (%)	12	11.4	11.1	10.4
area in dunums (estimate)	26.000	26.000	26.000	26.000
yield in tons/dunum (estimate)	5.3	5.3	5.3	5.3
total production (tons) of beets (estimate)	137.800	137.800	137.800	137.800
quantity (tons) of refined sugar extracted (estimate)	16.536	15.709	15.296	14.331
total value of sugar production paid by OCBS at a price varying according to sugar content of beets, basis LL 130 for 1 ton at 15% sugar content (estimate) LL	26.705.640	25.373.260	25.574.912	24.523.923
total returns to farmers, basis LL 130/ton at 15% sugar content, with price variation in accordance with sugar content (estimate)LL	19.085.300	18.382.520	18.024.240	17.152.655
total amount received by cooperative on the basis of a 2 thousand sugar bonus and LL 0.50 per ton of sugar(estimate)LL	61.563	59.758	58.477	56.100
total cost of processing received by SFL on the basis of LL 50 per ton (as per 1977 agreement) for a quantity of 137.800 tons LL	6.890.000	6.890.000	6.890.000	6.890.000
support price/ton of refined sugar, the support price being computed by adding: the cost of beets/ton of sugar + the processing costs/ton + LL 45/ton for the cost of services, sacs, etc LL	1.615.2	1.653.4	1.672	1.711.25
subsidy/ton of refined sugar of the price support program assuming a Beirut wholesale price of LL 1000/ton LL	615.2	653.4	672	711.25
total subsidy to be paid by government assuming a wholesale price of LL 1000/ton of refined sugar LL	10.162.947	10.264.260	10.268.912	10.189.341