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PROJECT FOR ERADICATION OF HASHISH

Report of Joint UN/FAO

Project Preparation Mission to Lebanon

March - April 1972

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SUMMARY OF CONCLUSIONS AND RECOMMANDATIONS

The Government of Lebanon has requested the UN Fund for Drug Abuse Control to assist in its programme for the eradication of Indian Hemp, source of the hashish drug, and to establish in its place the production of substitute crops. The hemp producing lands are within an overall area of 2,500 km2 in the North Bekaa. The hard core area lies within the District of Hermel.

The part of the Government's global programme for the area selected as suitable for the UN Fund consists of a first 3-year stage of direct field execution of on-farm improvements and establishment of substitute crops. In addition, the work financed by the UN Fund would include the requisite detailed land and water resources surveys and detailed specifications for forest and range land development and on-farm improvements.

The estimated cost of the total global government programme is estimated at approximately US$20 million. The estimated cost of the UN Project would be US$750,000 in UN funds plus directly associated government costs of US$200,000. The UN Fund would finance the purchase of equipment and supplies employed in the agricultural works and for the full or partial direct hire of national staff engaged in the field execution and detailed designs and specifications. The use of the UN Fund for employment of external staff would be only for the Project Manager and limited consultants for planning aspects.

To carry out the total programme, the Government has established a coordinating committee composed of the Director General of Agriculture, the Director General of Security Forces, the President of the Green Plan and the Director General of the Wheat Office. General cognizance is maintained by the Scientific Advisor to the President in view of the strong support given to the programme by the President. The UN Fund financed segment of the programme would be carried out by the Green Plan.

The Government's efforts, started in 1966, are envisaged as necessarily long-range. Already encouraging results have been achieved. The programme will result in the social and economic up-lifting for the region and at same time gradually eliminate the scourge of the hashish drug abuse problem.

Initial participation by the UN Fund for Drug Abuse Control on a modest basis is recommended. Continued participation beyond the initial stage should be contingent upon measurable accomplishments. Other UN participation is also recommended including UNDP technical assistance, UNDP Capital Fund, and the World Food Programme.

L E B A N O N

PROJECT FOR ERADICATION OF HASHISH

INTRODUCTION

The Government of Lebanon has launched a 7-year programme to eradicate Indian Hemp plantations and to substitute in its place econimically viable agricultural enterprises. The Government's current programme is a continuation of its efforts commenced in 1966 to develop a substitute agricultural economy for the hemp-producing region of the country. Prior to 1966, the Government's main reliance on force proved to be too costly in lives of both the gendarmes and the peasants as well as futile in real accomplishment.

The Council of Ministers decided in 1966 on a more constructive course of action wherein rural development efforts would be combined with the use of force. The Government's policy now is to first provide an alternative means of livelihood for the planters and then to resort to force if still required. The Government has taken the position that it is unjust to force planters out of hashish when they have no other means of making a living. The primary emphasis thus far has been on replacing hashish with the planting of sunflower seed for oil.

This report has been prepared by Mr. Elco L. Greenshields, FAO, Rome and Mr. Waclaw Micuta, UN Bureau of Narcotics, Geneva. It is based upon reports prepared by the Government and on their findings in a mission to Lebanon in March/April 1972.

BACKGROUND

Lebanon, a country with only 10,700 km2 of total area and a population of 2.6 million, enjoys a unique economy in which 1/3 of the gross domestic product is derived from commerce. Agriculture including fisheries accounts for less than 10% of the GNP, but 45 percent of the active labour force is employed in agriculture. Per capita income of the farmers are among the lowest of the different sectors of the economy.

The growth rate in agriculture is only about a third of that for the total economy, which on the basis of current prices is now about 7 percent. A good growth rate in the livestock subsector has occurred in recent years due in large part to the rapid expansion of modern broiler and egg production. The production of cereals and pulses has dropped.

The composition of agricultural production is heavily weighted toward fruits and vegetables, poultry and dairy production. Fruit and vegetable production make up half of the total crop production. One third of all agricultural production originates from the livestock subsector.

Roughly one half of the total food requirements of Lebanon is imported. Main imports include live animals, animal products and cereals. Agricultural exports make up about 20 percent of all exports. Fruits, vegetables and poultry products are the chief agricultural exports. The deficit of agricultural commodities for internal consumption is slowly increasing.

Lebanon has severely limited good arable crop land. For optimum crop yields supplemented irrigation is required in most regions of the country. The Ministry of Agriculture classifies about 450,000 ha as suitable for use for crops or grazing, however there are now only 145,000 ha planted in annual crops and 76,000 ha in established perennial crops. A large part of the perennial orchards has been established on bench terraces at tremendous cost. Although Lebanon has the physical and land resources for enlarging its cultivated area by about 50 percent through land improvement and provision of irrigation water, the costs would be exhorbitantly high.

The North Bekaa region where hashish is now produced is admittedly the poorest of the country. Government officials openly acknowledge that it has been a neglected area. Little has been done to develop the area and what has been attempted has been largely futile and mostly a wasted investment. It is a refuge area for outlaws and local people are highly suspicious of the Government. In reality it has been an island of isolation insofar as the Government is concerned. Without hashish income the people would not likely have enough for their bare subsistence. Fortunately the Government has taken an enlightened interest in the area and now plans a massive public investment to improve its economy and social services.

THE HASHISH PRODUCING AREA

General

The hashish growing area is fortunately limited to one region of Lebanon. It comprises an overall area of about 2,500 km^2 in the northern Bekaa Valley and the Hermel highlands. The region occupies the northern portion of the "casa" of Baalbeck and all of the "casa" of Hermel. The region is bounded on the north by the Syrian border and extends between the ridges of the Lebanon mountains and the ridges of the anti-Lebanon.

The average yearly rainfall over 22 years is 262 mm, with extremes reaching 160 and 400 mm. The driest months extend from May until November and the wettest months are January and February. Temperatures fluctuate between averages of 6.6° C in January and 24.8° C in August with absolute minima near 0° C and absolute maxima near 40° C. Relative humidity varies between 44% in June and 69% in January/February. Limited evaporation data indicate that monthly water deficits for crop production fluctuate from 60 mm in April/November up to 200-240 mm in June, July and August.

The structure of village life is along tribal or clan lines. Differences in background and religion have not unfrequently given rise to tense social relations. Considerable hostility exists toward government officials, which hostility has increased as the government security forces have undertaken stricter enforcement of trafficking in the illegal hashish crop.

The average annual income of the better placed farmer is reputed to be about L.L. 2,500 only half of which however is derived from farming activities. Officials estimate that about 50% of the total manpower is underemployed. Industry is non-existent in the region with the exception of a few gravel crusing plants and one cement block plant.

Government Services

Nearly all governmental services are at a low and generally inadequate level. Agricultural credit facilities are non-existent. Virtually no agricultural extension services are available to the rural villages. Elementary schools are not available to some areas and insufficient in nearly all parts of the region. See Annex Table 1 for existing and needed schools and teachers in the Hermel area. Among the poorer families the illiteracy rate for boys is reported to be 45% and for girls 76%. (See Annex Table 2 for areas without schools). Health services are relatively poor.

The Social Development Department is the one government department working with the people through centres at the village level. The Green Plan by virtue of its cost sharing arrangements undertakes land reclamation for only farmers with large holdings. The Green Plan Sunflower Project is giving direct assistance to a large number of farms (see separate section below).

Agricultural Research

Agricultural research is carried out at two separate field stations in the Baalbeck Valley. The Ministry of Agriculture has the Tel Amara Experiment Station which undertakes a wide range of crop and livestock research. This station is being assisted by the Ford Foundation. Its work on sheep breeding has promise of greatly enhancing lambing rates. The American University of Beirut has a 400-acre experimental farm in the area which also undertakes a wide range of crop trials. A considerabl part of its work is devoted to plant pests and diseases. On the whole, agricultural research services for the Project area are considered excellent.

Agricultural Credit

Limited agricultural credit and investment loans are available through the Green Plan and the BCAIF (Banque de Crédit Agricole, Industriel et Foncier). The BCAIF has not extended any credit in the Baalbeck/Hermel Area because of the high risks and the low credit worthiness of the farmers. The Green Plan credit has been granted mostly to large landowners. Thus it can be said that agricultural credit facilities for the benefit of the majority of the farmers is non-existent.

Forestry

Much of the land of the area not suitable for cropping or grazing unquestionably has great long-term potential for forestry. Historically this was a region of great forest resources. The failure of reforestation efforts sofar is due to destructive utilization practices and unregulated grazing.

The felling of trees by the inhabitants has been uncontrolled. The annual amount of felling of trees in the Hermel district for charcoal making is stimated at 116 tons and that used for fuel wood is estimated at 300 tons. Direct control of forest areas by special secu ity forces has been recommended as well as replacement of wood fires by oil burners and gas heating.

Probably the most difficult problem is that of restricting goat grazing which destroys new saplings and small trees. Along with development of the range resources the Government will have to find means to prevent all grazing in areas designated for reforestation.

Land and Water Resources

Natural water resources are relatively abundant in the area but not developed. The Orontes (Assey) River flowing north through the Bekaa is a magnificent water source that is hardly at all exploited for use in Lebanon. The river has an all-year-round average flow of 8 to 11 m3 per second (9 m3 annual average). Recorded extreme flows range between a flow of 6 m3 to a high of 79 m3 per second. While no international agreement on the use of the flow of this river has been reached between Lebanon and Syria, officials claim that Lebanon will likely have 1/3 of the flow of the river for its use.

Besides the chief water source from the Orontes River, this region has a large number of springs which are for most part beneficially used for domestic water supplies and for irrigation. A large number of smaller streams also supply water for irrigation. Hydro-geological studies completed by the Ministry of Water Resources indicate a considerable volume of underground water resources. A few large scale farmers have drilled wells for irrigation.

In the Hermel District which comprises the heart of the hashish growing area, there is presently only 58,000 dunums of cultivated land out of a total of 214,000 dunums of arable land. All of the presently abandoned cultivable land of 156,000 dunums and about 16,000 dunums of land now in crops would require major land reclamation treatment. About 23,000 dunums are now under partial irrigation. The plans for the Orontes River development and sketchy information on further development possibilities of surface and groundwater supplies indicate a probable potential of close to 100,000 dunums of irrigation.

Soils are fertile being mainly of alluvial origin. The Agricultural Research Station of Tel Amara surveyed the area in 1957-58 and a soil map (scale 1/50,000) is available. Soils are fairly loamy with intrusions of limestone and clay. Intense rain showers and strong winds have caused considerable erosion.

Lands of the Hermel Perimeter have been classified according to suitability for agricultural use (See Annex Table 3). About 1/6 of the area is highly suited for intensive cropping provided supplemental irrigation can be developed.

Land Tenure and Water Rights

With the exception of a few wealthy landowners, the farmers own or rent small holdings ranging in size from 1 to 3 hectares. The farms are much larger in the Bekaa plains area than in the narrow Wadi valleys. In the total Bekaa Province for which data are available, only about 35% of the land is owned by those who farm it. However, about 90% of the cultivators with holdings smaller than 5 ha own their land.

In theory, water is legally a national resource. Water is under the control of the local communities, but in fact there is little regulation. The existing laws contain all the necessary power for proper control. The problem of better water use control is one of Administrative capacity rather than any inadequacies in existing laws.

Current Economy and Prospects

The economy is almost entirely based on agriculture of a relatively low productive level. Major dry land crops are wheat, barley, lentils, chick peas, and now sunflower with the introduction of the recent Government programme. These crops combined with grazing of sheep and goats on the sparsely vegetated abandoned crop lands and arid plateaux and mountainous regions account for most of the agricultural production. The per capita income is reputed to be the lowest of the country. Hashish production is unquestionably the main source of cash income for up to above 2/3's of the families. Without hashish income the poverty level would be intolerably low.

Most farming is along traditional lines. However, modernization is beginning to take hold mainly through the influence of the operators of large farms. In the Bekaa plain a major part of the heavy plowing is done by tractors on a hire basis even for the small farmers. The region has an estimated 50 farm tractors owned mostly by large landowners with 30 to 300 ha of land.

The region is sparcely populated, roughly 15,000 persons for the 2,500 km2. For this meagre population the potentially vast resources are sufficient to provide a high income for the inhabitants. But the time and investment required to bring the economy to an acceptable level will be great. There is no quick solution. The most fundamental requirements for education and training will take many years. The re-establishment of protective cover including reforestation of the watershed lands will take a long period of time and the regulated grazing use of the vast range lands will also be extremely difficult to achieve.

Water is the key to high level agricultural output in this semi-arid region. High returns mostly under irrigation can be obtained from vegetables, fruits, pistachios and foodgrain crops. Should a viable livestock industry be established in the area, feed grains and fodder on irrigated land could be highly profitable.

In view of the sugar deficit situation in Lebanon, one major new cash crop for the area could be sugarbeets. The soils are known to be favourable for sugarbeets production. To be successful, however, a large and dependable supply of irrigation water is essential. Much further detailed survey work and feasibility studies would be required to determine the prospects for the introduction of sugarbeets on a sufficiently large scale to warrant the investment in additional processing facilities.

The strengthening of livestock production is considered the most promising prospect especially in the areas where hashish production is now concentrated. The highest possible use of the major part of the land area of stoney range and mountainous lands is to develop it into better rangeland. Sheep and goats, and to a lesser extent cows, have been a traditional source of income for these people for many centuries. Livestock grazing is a part of their heritage and they should therefore readily adapt to more modern methods if given adequate incentives and some assistance.

HASHISH PRODUCTION AND TRADE

Hashish is the arabic name for the Indian Hemp plant (Cannabis Sativa). It is propagated by annual seeding. The flowers and leaves of the plant produce a resin which contains the drug. As a narcotic or intoxicant it is either smoked or eaten as a means of getting the intoxicating effect.

Its beginning

No authentic record exists of when hashish was introduced in Lebanon. One report indicates that hashish seed was first planted in Lebanon about 35 years ago. At first it was planted only in small patches and the Government regularly destroyed most of it. In the early period of its introduction a very small amount of planted hashish escaped destruction in the high mountainous region north of Baalbeck.

Where Grown and Production

Originally hashish production was more widespread but now virtually all production is concentrated in the Baalbeck and Hermel Districts. From the small patches in the mountainous and remote areas, hashish plantations began expanding into the plains areas as the poor farmers became aware of the large profits being made by their neighbours in the mountains. Plantations increased rapidly over the past 10 - 15 years in great part with the encouragement of certain political leaders who promised the planters that their crop would not be destroyed on condition that leaders would receive one-third of the harvest.

Since hashish is an illegal crop, it is quite understandable that reliable data on area planted and production are difficult to obtain. From official records it appears that the maximum area planted was around 6,000 ha reached in 1965 prior to the Government's campaign launched in 1966 (Council of Ministers decision of March 21, 1966) to replace the cultivation of hashish with sunflower.

Estimates by the Green Plan of area planted to Indian Hemp for recent years are as follows:

Year	Dunums
1966	55,000
1967	20,000
1968	10,000
1969	8,600
1970	21,400
1971	10,000

Actual production figures are even more illusive than data on area planted. Drug enforcement officials place current annual production at 200 tons of all grades. They report that production has increased substantially over the last 5 or 6 years as the market and prices have increased due to the strong demand of new outlets in Europe and North America. This estimate is at considerable variance from that given by an official consultant's report on the progress of sunflower plantations. This report indicates a substantial reduction in planted area particularly since 1968.

Farmer Incomes from Hashish

Most small planters sell their hashish as "green" plant material to local persons who extract the hashish and market through traders. The average yield on irrigated land is 3 kantars (250 kg per kantar) per dunum for which the farmer receives L.L. 300 per kantar or a total gross of L.L. 900 per dunum. On non-irrigated land the average yield is about 1 kantar per dunum.

The farmers who process the hashish get an average return of L.L.1,800 on irrigated land and L.L. 900 on dry land per dunum. The dry land crop gives a higher yield of top grade hashish. The farmers who follow the better production and processing practices get a gross return of up to L.L.3,000 per dunum on irrigated land and up to L.L. 1,500 on dry land.

The cost of production is very low. The land is plowed and prepared and the seed is simply broadcast by hand. After planting the crop requires little care except for the irrigations.

Families involved in Production

An estimated 15,000 persons in the Baalbeck-Hermel producing areas are reported to get some income from hashish, wether as growers, processors or traders. This would indicate that probably 2,000 to 3,000 families depend upon hashish income for their main means of livelihood. In the heart of the producing areas up to 2/3 of families of the villages are involved in hashish.

Production and Processing Practices

The hemp is planted from late March to about the first of May. The seed is usually broadcast on ploughed and disked fields. No cultivation is required during the growing season. Under better practices the male shoots of the plants are destroyed when the plant is still young. Reaping of the plants begins about the middle of September when the leaves have turned to a yellow colour. After cutting, the plants are spread out in the sun to dry for about 5 days. The plants are then carried in cloths to the farmers' homes to await processing.

Processing does not begin until November when the weather is cold. The hashish contains an oil which would melt if removed from the plant in hot weather. In cold weather the resin like substance falls in lumps when the leaves are crushed. After separation of the stems and seeds which is accomplished by repeated beating or crushing, the lumps of resin are passed through a series of 3 sieves, each one finer than the other. The third sieve is a very fine silk-like material.

The powder that passes through the 3rd sieve in the first crushing of the plant is the first or flower grade and demands the highest price. After the first screening all the remaining material is crushed and ground again and passed through all 3 sieves. At this second stage the hashish that passes through the 3rd sieve is 2nd grade. The same process is repeated a third and fourth time to produce 3rd and 4th grades.

Another interesting processing technique mentioned involves the beating of the plant in a closed room with concrete floor and burlap lining on the ceiling and walls. The fine resin dust that collects on the ceiling is 1st class, and that which collects on the walls is 2nd to 4th grades.

The hashish powder is put in separate bags by grades and compressed by a machine into firm lumps. The first grade is usually packed in sack sizes of 200 grams, 1/2 kg, and 1 kg. The lower grades are packed in tins of 600 and 1,200 gram sizes.

Pricing and Trade

The farmer gets an average of L.L. 50 per kg for all grades. For first grade he may get L.L. 60 or more and for the lowest grade only L.L. 25 per kg. From Lebanon it is brought at L.L. 120 per kg or more. The price in nearby Jordan is on the order of L.L. 225 per kg and in Cairo is around L.L. 900 to L.L. 1,000. The price to the ultimate final consumer outside Lebanon likely reaches L.L. 10,000 per kg. These price figures indicate the enormous profits that go to the smugglers and traders.

ENFORCEMENT AGAINST ILLEGAL TRAFFICKING

All production, processing and trading in hashish is illegal in Lebanon. Lebanon Decree No. 4030 passed on 4 May 1960, provides in Article I for the punishment of anyone taking, applying or using narcotics with penalties up to 3 years imprisonment. Article II of this Decree provides punishment of 3 to 15 years imprisonment for anyone found guilty of planting, making, possessing, transferring, trading, importing, exporting or dealing with narcotics.

According to security officials, enforcement against narcotics trade outside the hashish producing areas is excellent. Within the producing areas virtually no enforcement exists against production. Frequent seizures of narcotics and arrests are reported in the area but evidence of effective control is lacking. There appears to be little or no police inspection and enforcement at the village level.

The police forces are probably capable of enforcing the present law against hashish production and trade. The real question is whether they will be released in fact to do the job. It would seem clear that the Lebanese Parliament has not released the police to stamp out hashish production. From a strict technical point of view the police has the authority to go into the area, but they know that the Government would not support it.

Some enforcement officials insist the present law is not sufficiently severe, particularly against the traders. All are in agreement that the main weakness is that even the laws on the books are not enforced. Especially needed is equal application of the law. Considerable favoritism was reported. The weak link in enforcement is the judiciary, not the police forces. The judges as a matter of current practice never hand down more than the minimum 3-year sentence for trading in narcotics. Even the President has expressed the wish to see more severe penalties of 5, 7 and 9 years sentences handed down.

Magistrates suggest strengthening of law enforcement in the following ways:

(a) Increase maximum penalty against traders up to 25 years imprisonment;

(b) Enforce impartial treatment under the law, and

(c) Seek better cooperation on border control of drug trafficking, especially with Syria.

The Mission would support the above strengthening of security measures and further recommend that the Government undertake annual aerial photography of the producing areas using modern remote sensing techniques so that absolute verificable data are available on the progress of the global programmes to eradicate hemp growing.

THE GOVERNMENT PROGRAMME

General

The Council of Ministers agreed on 18 July 1971 as a matter of urgency to launch a massive rural development effort in the Hermel area. The Green Plan land reclamation projects in the area are continuing to be agressively pursued. One of the most important current projects of the Government has been the introduction of sunflower as a substitute crop for hemp.

Global Rural Development

The Government's major effort at up-lifting the economy of the North Bekaa region is beginning in an impressive way. Some of the reported accomplishments within less than 1 year of its operation include reclamation of 2,000 dunums of land belonging to 202 owners, distribution of more than 30,000 apricot fruit tree seedlings, establishment of fodder crops on 1,700 dunums, inauguration of milk collection for cheese making on a trial basis, establishment of a 20 bed hospital with 1 full-time doctor, establishment for the first time of a veterinary service in the region with 1 veterinary and two technicians, construction of 42 km of agricultural penetration roads, re-establishment of telephone communications to Hermel and installation of modern radio equipment, building of electrical lines to 32 villages to which about 1400 houses are now connected with electricity; and creation of a first kindergarten school at Hermel.

The Government is now engaged in finalizing a 7-year Plan of global development for the region (See Annex Table 4 for preliminary figures). The investment plan being prepared would be a part of the Lebanon development plan for the same period. The plan is envisaged in two stages of three and four years respectively. While the plans are not yet completed and approved by the Government, it seems clear that the government is committed to a programme of about the magnitude of that indicated in Annex Table 4.

The roughly US$ 20 million programme would include strengthening of health, sanitation and educational services, establishment of cultural and agricultural extension centres, domestic water supplies, road construction, telephone and electrical networks, irrigation works, land reclamation, processing plants and farm mechanization.

Under the global programme the Government expects to construct 300 km of penetration roads in the first 3-years and an additional 250 km in the last 4-years of the programme. It expects to establish fruit orchards and other substitute crops on about 8,000 ha. It expects to develop new irrigation from springs and wells on about 1,000 ha and to complete subsoiling land reclamation on about 12,000 ha.

The Government's presently allocated budget for the current year is approximately L.L. 4 million. The projected major Assey River Development Project estimated to cost about L.L. 34 million is not included in the above 7-year plan for the region. Some industry and handicraft enterprises are envisaged for the region but specific proposals have not yet been formulated.

Green Plan Reclamation

The Green Plan regular programme, in which programme the World Food Programme is participating with a 5-year US$ 10 million participation, is executing the land reclamation parts of the Government's Global programme. The WFP contributes food commodities for some 13 separate items of work which include construction of terrace walls, reservoirs, irrigation and drainage canals, farm utility buildings, roofs for houses, farm access roads and reforestation including windbreaks.

Sunflower as a Replacement for Hashish

The Government's programme of promoting and subsidizing the production of sunflower seed for oil, as an alternative to hashish is considered as a success when viewed as an interim measure. It has definitely started many farmers on the road to getting out of the hashish production. However, it admittedly is not considered as a permanent solution.

The Mission does not accept the view of many critics who consider the sunflower project a failure. While the subsidy cost to the Government has been relatively high, it is the only part of the Government's total effort in the area that can be shown to have taken hand out of hemp growing. The Mission feels that sunflower may very well remain as one of several economically viable replacement crops. Until longer range solutions are worked out, continuation of the sunflower project is strongly recommended.

The sunflower project was started in 1966 on a trial basis in 14 villages in the Baalbeck and Hermel Districts. That first year 17 farmers planted 831 dunums and harvested 43 tons of sunflower seeds. The programme has been stepped up each year since and in 1971 about 1,000 farmers in 43 villages planted 50,000 dunums from which they harvested 2,600 tons of seeds (See Annex Table 5 for full detailed data).

The sunflower project is being implemented by the Green Plan. The Office of Wheat and Sugarbeets has purchased the seed at a fixed government price of L.L. 0.75 per kg which is about L.L. 0.30 to L.L. 0.35 above the open market price. The contact between the Green Plan and the farmers has provided in addition to the Government purchase at the guaranteed price of L.L. 0.75 per kg, for free seeds, transport and initially free-of-cost fertilizer, and bags and transport of the harvested seed. It will be noted from Annex Table 5 that yields were marketedly lower in 1970 and 1971. Less favourable rainfall reported for these years is unquestionably the main cause of lower yields on dry land but the reported discontinuance of free government fertilizers following 1969 was undoubtedly an important contributing cause.

The Government's present plan and policies with regard to the supply of fertilizers for the sunflower project was not ascertained. Farmers interviewed by the Mission listed the resumption of the supplying of fertilizers by the Government as one of their chief needs if they are to continue sunflower production.

According to a study made by the American University of Beirut, after the first three years of the sunflower project, farmers were not yet fully convinced that sunflower is a good replacement of hashish. Without the production subsidies and guaranteed price support, it seems certain that sunflower would not survive as an economically viable crop in the area.

Experimental trials under irrigation have shown that much higher yields can be obtained than those achieved by the farmer. Adequate irrigation water, better application of fertilizers and cultural practices should assure the farmer of normal yields of 200 kg per dunum or more. Experimental trials in the area have produced maximum yields in excess of 400 kg per dunum. If farmers could get yields on the average of 75 kg or more per dunum on dry land and 200 kg or more on irrigated land, they should be sufficiently encouraged to continue to grow sunflowers instead of hashish (See Annex Table 6 for costs/returns analysis).

A reasonable long-range target for the area would be to maintain the present level of achievement, that is, about 15,000 dunums of sunflower on irrigated land and about 40,000 dunums of dry land. If the above indicated potential yields could be attained the results would be a total output of about 6,000 tons of seed annually. At the present price subsidy of L.L. 0.30 per kg this would require an annual outlay of L.L. 1,800,000. However, as higher yields are achieved, the relative amount of the subsidy could possibly be reduced somewhat.

Orontes (Assey) River Development Project

Preliminary plans have been completed by an engineering consulting firm for the development of the Orontes River. The project would cost an estimated L.L. 34 million and would provide gravity flow irrigation for 4,000 ha and water by pumping for the irrigation of an additional 2,000 ha. The project would not directly benefit much of the present hashish growing lands. It would however considerably benefit the region in general and provide a stronger basis upon which the economy of the region could be built.

The project would make use of about 1/3 of the average flow of the Orontes river which use is subject to agreement between Lebanon and Syria. The Government cannot proceed with this major project until such agreement is reached. The Syrian Government reportedly has the matter under study at the present time.

PROPOSED UN FUND PROJECT

General Description

The Project proposed for UN Fund participation is a first stage comprising definite agricultural aspects of the Government's total programme. The Government's programme involves a two-pronged attack against the hashish drug problem. It combines a massive rural development investment in the hemp growing area with the judicious use of police enforcement measures against both hashish production and trafficking. The part of the total governmental programme selected for UN financial and technical assistance includes those aspects which the Mission considers would most benefit from external assistance. These are the areas

where the Government has been generally least effective in its efforts sofar. They include primarily improvement of farming practices and on-farm development. The UN Project would be aimed essentially at getting accomplishments on the ground on a fully integrated basis as contrasted to a piece-meal approach.

The UN Project would first of all provide for the detailed on-the-ground level planning in a fully comprehensive way including the development of the potentially usuable water resources, reforestation and watershed protection on the steeply sloping lands, restoration and establishment of range carrying capacity of the lands best suited to such use, reclamation of potential arable lands for crops, and infrastructure services and facilities.

The UN Project secondly would provide assistance toward the establishment of cooperatives along lines found suitable to bring farmers into a position to work effectively on the development activities designed to increase their own well being. One most essential activity is to bring the present destructive free-grazing methods under regulation so as to enhance the grazing capacity of this most abundant of land resources in the region. Other activities which would appear to require cooperative arrangements are the provision of needed seasonal production credit and intermediate term investment loans for the cultivators. Cooperative arrangements would also be suitable for operation of the needed marketing facilities, transport, packaging, processing and storing the farm produce.

A third main part of the UN Project would be to provide a field level execution team for all on farm development works, small irrigation works, reclamation of crop and pasture land, reforestation and the establishment of orchards and other substitute crops. The UN team would not be responsible for major civil works including the government's global programme for the region such as the proposed Orontes River development, major roads, electrical transmission lines, hospitals, schools, community buildings and the like which would be undertaken by the regular ministries of the government.

Management

The overall management of the field level execution of works and planning would be provided by an internationally recruited Project Manager. The UN Specialized Agency assigned to execute the project, in this case the Food and Agriculture Organization of the United Nations, would consult with the Government on the selection of the Project Manager. The Project Manager would be provided with an administrative assistant and bilingual secretary.

Detailed Surveys and Planning

The detailed plans and specifications for integrated development and all analyses to ascertain economic, social and engineering feasibility of various alternatives would be provided through consultant services and the employment of national agricultural specialists. The professional supervision of both international experts and local staff would be provided through subcontractal arrangements. The Mission recommends that the American University of Beirut (AUB) who have had experience in the preparation of rural development plans, maintain an internationally experienced staff in all major agriculture specialties and most important of all have the respect of national agricultural staff, be engaged to undertake the planning work (See Annex A for a list of senior agricultural staff and brief resume of current agricultural studies and research work being carried out by AUB).

All physical surveys would be based on best obtainable scientific information. A first requirement is that new aerial photography would be undertaken and prints made of various appropriate scales for detailed soil capability surveys and mapping, land vegetation cover complex mapping, detailed farm land use diversification plans, identification of areas requiring soil erosion prevention measures , areas requiring reforestation and areas requiring special protective grazing restrictions. Also aerial photo prints of suitable scale would be used for tracing present landownership boundaries. Existing aerial photos are available only for 1962 which would not be sufficiently up-to-date for the required detail survey work. The new aerial photos would be taken at the most advantageous time so as to permit a high degree of interpretation accuracy in the identification of growing hemp fields.

With up-to-date aerial photographs in hand the soil mapper is equipped to vastly speed up his work and at same time achieve a higher level of precision. Sound land use capability classification rests on soil surveys. At presnt, there is available for the Project area only reconnaissance scale soil surveys of a scale of 1/50,000.

The planning phase of the Project would include a special survey of the nomadic grazing of the range lands. The owners of the sheep and goat flocks need to be identified as well as their usual grazing patterns and routes followed. The economics of present practices would also need to be analyzed as a basis for formulation of recommended practices under controlled grazing which would permit the maintenance of highest possible capacity of the range lands.

Field Level Execution

A field-stationed execution team would be established at an early stage of project operations without waiting for the completion of the detailed comprehensive plans. The field personnel would need a shake-down period to become a smoothly functioning team. They would immediately take over certain agreed upon aspects of the Government's on-going agricultural programme in the Project area including the sunflower project, land reclamation on small holdings, selected range development, forage establishment, orchard plantations and reforestation.

A large amount of work that obviously would fit into an overall comprehensive plan could be commenced immediately and therefore recruitment of the field team need not be delayed. The field execution team could initially assist with some of the basic field surveys.

The field team would work against definite targets, established for each year for each type of activity. The team would have a target of a specified number of dunums of fruit orchards to be established, a specified number of dunums of perennial forage crops to be established and similarly for all works that are subject to physical measurement. The team would maintain records of progress and prepare definite reports on work progress at end of each year's operations.

Cost Estimates

The estimated cost of the UN Fund Project for 3 years would be US$ 750,000 for the UN Fund and US$ 200,000 for the directly associated Government cost. Major items of costs are as follows (for details see Annex 7):

Item	UN Fund	Government
International team leader and staff	$126,900	-
Field execution team	73,200	$ 82,200
Consultant Planning Services	200,000	-
Field Equipment and Transport Vehicles	100,000	-
Disposables	27,500	20,000
Buildings	50,200	54,000
Processing of Artisan Equipment	110,000	-
Land and rights-of-way	-	10,000
Contingencies	27,200	33,800
Executing Agency Overhead	35,000	-
	$750,000	$200,000

The cost of the Government's global 7-year programme for the Project Area estimated at approximately $20 million would be in addition to the above costs of the UN Fund Project.

Guarantees by Government

As a condition of the UN Fund grant of financial and technical assistance, it is recommended the Government must undertake on its part the following assurances:

(1) That it will continue to vigorously pursue enforcement measures against drug trafficking and in connection therewith will strengthen the judiciary processes so as to insure non-discriminatory penalties against all persons found guilty of illegal trafficking;

(2) That it will undertake positive enforcement by actual destruction of the crops against growers who resume the growing of hemp after a remunerative substitute crop has been established on their land;

(3) that it will arrange for the release from their present positions with full reemployment rights those professional staff members who are selected for either the planning or the field execution teams established under the UN Fund project;

(4) that it will allocate funds up to the amount inidcated by the budget for the Project through the establishment of an imprest account or other appropriate means;

(5) that it will supplement the UN Fund resources wherever found not sufficient for the execution under the UN Project of mutually agreed upon works;

(6) that it will undertake at Government expense the construction or rental of all permanent building facilities, offices, warehouses and rest houses as required for the efficient execution of the UN Project;

(7) that it will undertake the establishment of agricultural cooperatives with central offices in Baalbeck or Hermel and Branch offices in the separate Wadi tribal groupings of villages as are determined appropriate to assure active farmer participation;

(8) that it will undertake to establish necessary market outlets at government guaranteed prices where appropriate for all farm products adopted and put in practice by farmers as a substitute to hemp, similar to the procedure already being used for the sunflower project;

(9) that the government will establish agricultural credit facilities, either through newly established cooperatives or through branch offices of the Agricultural Credit Bank,whichever is found most feasible by the UN Fund planning team and the Government;

(10) that the Government will continue with its planned global programme for the rural development of the area and accept the UN Fund Project as an integral part of such programme, irrespective of size of the proportionate part to be financed through the UN Fund;

(11) that the Government will comply with such rules and regulations as are required to assure competitive bidding and fair costing on any contracts with third parties for the execution of works which are agreed upon as a part of the UN Fund project; and

(12) that it will undertake to ascertain annually the precise areas that continue to be planted to hemp either by aerial photo or other means that can be fully substantiated.

RELATED COMPLEMENTARY EXTERNAL ASSISTANCE

UNDP Technical Assistance

The UNDP has completed three large scale technical assistance projects which have contributed to establishing a basis for agricultural development in the North Bekaa Valley. A project for soil survey and related irrigation schemes was completed in December 1967. The project produced a reconnaissance soil capability map of the area and a general programme of development for the region of "Hermel - El Qaa". A groundwater survey was completed in June 1969, which project came up with a report confirming the availability of considerable groundwater resources in the valley. A Forestry Education, Training and Research project was completed in December 1969.

One continuing project "Animal Health Institute (Phase II)" could serve certain aspects of livestock development in the Project area. Five international animal health and disease diagnostic experts are currently serving on this project. One Associate Expert is stationed with the Bekaa Valley Veterinary Office of the Ministry of Agriculture.

A project for the development of Hydro-Agriculture with a large team of experts is concerned with planning for water development for irrigation. While its work does not cover the Bekaa region, the experts could be made available for consultation on water development works in the Project area.

A number of individual experts would also be available for advice on the UN Fund project. In particular the expert on pasture and fodder development is currently making a very substantial contribution toward enhancing livestock production in the Project area and his work plans call for continued work in the area. During 1971, he was able in cooperation with the farmers in the Hermel area to establish more than 2,000 dunums of pasture and fodder crops.

UNDP Capital Fund

The Government has requested $400,000 from the UNDP Capital Fund for the purchase of farm tractors for exclusive use in the North Bekaa Valley. The UNDP has agreed in principle, but acceptable financial guarantees have not yet been worked out by the Government. It is understood that the capital resources are in currencies that would be acceptable for the purchase of tractors from Yugoslavia.

World Food Programme

The World Food Programme (WFP) could be utilized to fill a uniquely advantageous role in the proposed agricultural development programmes. The Mission recommends that the Government make a request to WFP either for the extension and expansion of the currently effective Lebanon 438, "Integrated Development of the Lebanese Mountain Areas" or a new project especially formulated for the UN Fund Project Area.

The unique place of WFP assistance arises out of two fundamental circumstances: (1) some of the most remunerative substitute crops for hashish will not produce an immediate return and in the interim period the farmer must have supplemented income for subsistence; and (2) livestock feeds are essential to bridge the gap between the seasonally available grazing and the requirements to maintain liveweights of foundation herds and to fatten the young animals for the slaughter market.

In view of the shamefully low level of elementary educational services in the Project area, WFP could also provide for school lunch feeding. Free school lunches would serve to induce families to send their children to school as well as contribute to better nutrition and health for the children.

The Mission therefore recommends a WFP programme with at least 4 major components. The first component would be an enlargement of assistance for land reclamation work like that now covered by Lebanon 438 wherein food is supplied at a fixed amount per day as part payment of wages. The second component would be the distribution of family rations on a fixed scale based on amounts of land converted to fruits, grapes and pistachios as compensation for loss of production. The duration of such family ration distribution should be for the full number of years required for the new crops to produce a net income to the farmer. A third component would be the supply of livestock feeds (1) as a supplement during dorment grazing seasons to better maintain foundation herds, (2) as concentrates for milking cows and (3) for lamb fattening operations. In the livestock fattening operations farmers would be required to pay for the feed at normal market prices. The resulting receipts would be accumulated in a revolving fund that would be used to sustain lamb fattening enterprises after the completion of WFP assistance. A fourth component would be for institutional feeding of elementary school age children for lunches in regular day schools and for full meals at day boarding schools that may be established under the Government's global programme. Rations could also be furnished at kindergartens and day nurseries for mothers who are expected to be employed in handicraft industries.

A rough outline of the scope of a special WFP assistance project is given in Annex B.

Bilateral Assistance

A number of features of the Government's global programme would seem to be suitable for bilateral aid. The Mission suggests that the Government may want to pursue the possibilities for complementary assistance from bilateral donors. One country was reported to be especially interested in giving dairy plant facilities for milk processing and cheese making. The Mission therefore did not include for the UN Fund any such equipment even though it would be needed as soon as the pasture and fodder improvement and associated livestock development activities begin to show results.

BENEFITS AND JUSTIFICATION

The main justification of the proposed UN Fund Project will be its effects in reducing hashish production. However, it cannot be claimed that the Project will lead to the complete eradication of hashish production in Lebanon. No matter what is done, the Mission considers that a residual hard core of illegal production will likely remain. Substantial reduction in the present level of hashish production is anticipated. Drug abuse enforcement officials believe that if the present production could be reduced by about 3/4s, they would then be able to wipe out the smuggling rings and the through-opiates traffic.

The full social and economic benefits of the Project to the area cannot be determined precisely until detailed plans have been completed. At this stage only isolated features of the Project can be evaluated.

The Project would lead to a major transformation in the agriculture of the area from primarily subsistence and hashish farming to a commercially-oriented annual crop, fruit and livestock economy. Once the major reorientation of agriculture is commenced through the initial inputs of the UN Fund Project, continued improvement could be expected over a long period - perhaps 20 or more years.

The FAO report on the development of the Hermel Region completed in 1969 shows that a future modernized 7 ha annual crop farm would have an annual gross income of L.L. 19,000 and a net family income of L.L. 9,100. A typical livestock farm would have an annual gross income of L.L. 24,000 and a net of L.L. 8,700. A 1.6 ha mixed livestock crop farm would have a gross income of L.L. 12,600 and a net family income of L.L. 5,000. Such levels of income compare favourably with the farmer income from hashish growing and would undoubtedly be highly satisfactory to present farmers.

Highest potential returns on an area basis would result from fruit and other perennial crops. A chief drawback to such crops however is the large investment that must be continued from 2 to 10 years before any net returns can be expected, depending on the particular crop. In a series of Annex Tables 8 to 12 details are given on the year-by-year investment requirements and income data for apricots, cherries, pistachios, grapes and peaches.

The range improvement aspects of the project would be long-range and not likely result in a high rate of return on investment. On the other hand, sheep fattening operations would produce a very high rate of return. Preliminary calculations prepared for the Mission on fattening out in 4-months periods of 71,000 sheep over a 3-year project duration would involve a project cost of $451,000 and result in an estimated net income of $542,000. On the whole the investment for agricultural development should produce a fully satisfactory rate of return to the national economy in addition to the results achieved against drug abuse.

ANNEX A

THE AMERICAN UNIVERSITY OF BEIRUT

As the Mission considers favourably the possibility of contracting with the American University of Beirut (AUB) for the preparation of detailed plans and specifications covering all aspects of a fully integrated agricultural development of the North Bekaa region, this brief resume of their staff and activities is presented for background information.

AUB is a regional university having 4 faculties - Agricultural Sciences, Engineering and Architecture, Medical Sciences, and Arts and Sciences. The University now has been serving the people of the Middle East for more than a century. AUB incorporates research, both basic and practical problem-solving, with teaching.

AUB maintains a high level staff in their faculty of agricultural sciences. The staff is headed by Dr. Stanley P. Swenson. Dean, and Dr. James W. Cowan, Associate Dean. The senior staff includes professors from 3 countries, USA, France and Germany. The remainder of the teaching and research staff includes 14 associate professors, 2 senior lecturers, 11 assistant professors, 1 lecturer and 1 instructor. All major fields of the agricultural sciences are covered in the competence of the staff.

The research programme of AUB employs 12 research assistants, all with B.S. or M.S. degrees, 2 visiting research assistants. In addition, 22 graduate assistants are currently employed.

Since 1955 the Agricultural Sciences staff has published 343 research reports. Many of the reports have findings applicable to the agricultural development problems of the North Bekaa region. The AUB agricultural research farm in the Bekaa Valley enables the staff to concentrate its work heavily on problems of Project area. A selection of recent reports of particular value to the proposed UN Fund Project are as follows:

- Factors and Sources of Information related to the Growing of Sunflower as a Replacement of Hashish in the Northern Beqaa.
- Economic Study of the Production and Marketing of fluid Milk in Anjar Village in the Bekaa.
- Sugar Beet Production Studies in the Beqaa Plain, Lebanon.
- Feeding Lambs after Weaning in the Bekaa Valley.
- Attitudes toward selected aspects of rural life and technological change among Central Bekaa farmers.
- Determining maximum-profit farm plans in the Central Beqaa.

الجمهورية اللبنانية
مكتب وزير الدولة لشؤون التنمية الإدارية
مركز مشاريع ودراسات القطاع العام

ANNEX A
(Continued)

The research work reported upon for the last academic year, 1969/70, includes findings on the following:

- Holstein steers feeding trials with (1) dried sugar pulp, and (2) poultry litter at a level of 30% in fattening ration.
- Urea supplementation effect on roughage utilization by sheep.
- Studies to identify the different species of intestinal parasites in sheep in Central Bekaa.
- Experiments of wheat straw by Awazi sheep in Bekaa plain.
- Investigations in the husbandry practices, economics and problems of livestock production by roaving Bedouins in Lebanon.

ANNEX B

WORLD FOOD PROGRAMME ASSISTANCE

Special World Food Programme assistance as a complementary external input to the UN Fund is recommended by the Mission because of the highly beneficial impact it would have on accomplishing some of the most difficult objectives of the Project. It could furnish the means of enabling farmers who select perennial crops as a substitute for hashish production to sustain themselves during the establishment years when no income would be available from the new crops (for length of waiting period for selected crops see Annex Tables 8 through 12). In addition, WFP could provide the livestock feed supplements which are an absolute necessity to enable the roaving herdsmen to bring about regulated grazing, without which this abundant range land resource of the area cannot be brought into a higher level of production. Livestock development can best form the basis for a permanently stable agriculture economy for the region.

Exact details of a probable WFP input are still to be worked out. Except for the proposed livestock feeding, the rations and work norms need not be different from those already employed in the Lebanon WFP Project 438.[1] Of these schedules, those that would be applicable for the UN Project are as follows:

1. For land reclamation work on public lands, the workers receive 3 kg of wheat per working day as part payment of wages according to the following norms:

1 day's work for 1 m^2 of stone terrace wall constructed
1 day's work for 1 m^2 of unpaved farm roads constructed
10 days' work for 1 m^2 of concrete reservoir works
1/10 day's work for 1 m^3 of reafforestation

2. For fruit tree planting on farmers own land, farmers receive one family ration per day consisting of 2,500 gr of wheat, 200 gr of vegetable oil, 125 gr of dried skim milk, 125 gr of canned meat, and 125 gr of canned cheese for a 3-year period as compensation for loss of production according to following scale:

0.1 - 0.5 ha, farmer receives 150 days of rations per year
0.5 - 1.0 ha, farmer receives 175 days of rations per year
1.0 - 2.0 ha, farmer receives 200 days of rations per year

3. On farmers own land they receive for land reclamation work accomplished 1 family ration per working day, which ration consists of 2,500 gr of wheat, 200 gr of vegetable oil and 125 gr of milk. Some of the established work norms for such work are:

2 man-days work for 1 m^3 of retaining wall constructed
107 man-days for stones removed from 1 ha
7 man-days for 1 m^3 water capacity of concrete reservoirs
400 man-days for reforestation of 1 ha

ANNEX B
(Continued)

4. Institutional feeding for children from infants to 18 years of age at day nurseries, orphanages and schools includes 6 basic foods varried according to age-groups and whether the child is attending a boarding or day institution. The foods, which are prepared for consumption at the institutions, include wheat flower, dried whole milk, canned fish, pulses, butter-oil and sugar.

The Mission places highest priority on WFP assistance for the supplemented feeding of sheep and goats for milking and for the fattening of lambs. As a rough first approximation of the nature and magnitude of such a programme, the schedule for sheep or goat milking would be about:

Item	First year	Second year	Third year
No. of head milking	5,000	10,000	10,000
Supplemented feed - 1/2 kg per day for 300 days/yr	750 tons	1,500 tons	1,500 tons
Cost at US$90/ton	$67,500	$135,000	$135,000

Total for 3 year: 3,750 tons and US$337,500

The schedule for lamb fattening would be about:

Item	First year	Second year	Third year
No. of head to fatten	15,000	25,000	30,000
Feeding at 1 1/2 kg per day for 100 days	2,250 tons	3,750 tons	4,500 tons
Cost at US$90 per ton	$202,500	$337,500	$405,000

Total for 3 years: 10,500 tons and US$945,000

The above magnitude of feeding for milking and fattening operations are considered feasible by livestock and range development specialists now working in the Baalbeck/Hermel area. Parallel to the above supplemented feeding it would be necessary to establish fodder production and to increase capacity of the range lands. Obviously all 4 of the proposed components of a possible WFP input would need to be much more thoroughly formulated than has been possible by the Mission.

ANNEX TABLE 1

EXISTING NUMBER OF SCHOOLS - PROPOSED NUMBER OF NEW SCHOOLS

Hermel Perimeter

Locality	Existing Schools	Existing Teachers	Proposed no. of new schools	Proposed no. of new teachers
Wadi Valleys	18	29	23	30
The Plain	6	16	6	13
Total	24	45	29	43

Source: Special survey by Office of Social Development

LOCALITIES AND VILLAGES THAT DO NOT HAVE SCHOOLS

Hermel Perimeter

Locality	Number of villages	Total Population of villages	Population aged 5-15 years	
			Males	Females
The Plain	5	309	62	93
Wadi Vissan	9	715	144	146
Wadi Fa'rah	2	130	26	22
Wadi Sharbeen	2	136	32	29
Wadi Zagreen	4	150	37	26
Wadi El-Turkuman	6	322	71	92
Wadi El-Niyrah	3	71	19	14
Wadi Nabeet	3	71	18	15
Wadi El-Karm	4	222	52	49
Wadi El-Ratell	1	19	2	4
Total	39	2145	463	490

Source: Special Survey by Office of Social Development

ANNEX TABLE 3

LANDS CLASSIFIED

ACCORDING TO SUITABILITY FOR AGRICULTURAL USE

Hermel Perimeter

Class	Description	Area (ha)	Percentage of total area
2 & 5	Land suited for crops	8,000	20
1 & 3	Land suited for fruits	3,000	7.5
7	Land suited for grain	19,500	48.8
8	Land to be retained in watershed protection forest and other cover	9,500	23.7
Total		40,000	100.0

Source: B.E.I. -AGRER Report of August 1969

ANNEX TABLE 4

PRELIMINARY COST DATA FOR GOVERNMENT'S GLOBAL PROGRAMME

Hemp Eradication Project Area

Work Item	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	Total
				- In Lebanese Pounds -				
Road Construction	2,500,000	2,500,000	2,500,000	1,500,000	1,500,000	1,500,000	1,600,000	13,600,000
Canal Rehabilitation and Construction	300,000	350,000	350,000	-	-	-	-	1,000,000
Fruit Orchards and Substitute Crops	750,000	1,200,000	700,000	500,000	400,000	400,000	400,000	4,350,000
Pasture and Animal Production	200,000	300,000	300,000	125,000	125,000	125,000	125,000	1,300,000
Underground Water Development	700,000	1,200,000	1,200,000	350,000	350,000	350,000	350,000	4,500,000
Housing and Domestic Water	300,000	300,000	300,000	1,300,000	1,000,000	1,000,000	1,000,000	5,200,000
Land Subsoiling + Leveling	4,500,000	4,500,000	4,500,000	4,000,000	4,000,000	4,000,000	1,000,000	26,500,000
Collecting and Processing Plants	185,000	185,000	180,000	250,000	250,000	250,000	250,000	1,550,000
Farm Mechanization	200,000	300,000	300,000	200,000	100,000	100,000	100,000	1,300,000
Health and Sanitation Services	200,000	800,000	700,000	-	-	-	-	1,700,000
Education	4,000,000	850,000	-	-	-	-	-	4.850,000
Extension and Cultural Centres	-	1,400,000	200,000	-	-	-	-	1,600,000
Total	13,835,000	13,885,000	11,230,000	8,225,000	7,725,000	7,725,000	4,825,000	67,450,000

Source: Various tabulations furnished by government - all figures subject tomodification upon official verification

ANNEX TABLE 5

FARMER PARTICIPATION IN SUNFLOWER PROJECT

Results achieved 1966 - 1971

Item	1966	1967	1968	1969	1970	1971
Number of villages	14	28	36	40	41	43
Number of farmers	17	273	763	1,028	850	954
Dunums of semi-irrigated	660	5,139	16,090	11,332	9,102	12,947
Average yield (kg/dm)	56	65	77	102	92	80
Dunums dry land	171	4,870	12,787	29,986	31,909	39,916
Average yield (kg/dm)	25	33	35	46	23	37
Total planted area (dm)	831	10,009	28,877	41,318	41,011	52,863
Total production (ton)	43	530	1,675	2,540	1,600	2,597
Average yield all land	51	53	58	62	38	49

Source: Annual Report of Sunflower Project, 1971

ANNEX TABLE 6

ROUGH APPROXIMATION OF COST AND RETURNS

TO FARM OPERATORS FROM SUNFLOWER SEED PRODUCTION

Item	Dry Land	Irrigated Land
	L.L. per dunum	
Land rent/cost 1/	10.00	40.00
Production costs:		
Deep plowing	4.00	4.00
Disking (3 times)	4.50	4.50
Planting	1.00	1.00
Seed (1/2 kg/dm)	.20	.20
Fertilizer (30 kg/dm)	4.80	4.80
Harvesting & Marketing:		
Harvesting	1.00	1.00
Transport from field to threshing center	1.00	1.00
Threshing	.50	.50
Transport to market	.60	.60
Total Costs	27.60	57.60
Gross Returns:		
At present Average yield 2/	30.00	67.50
At future Potential yield 2/	56.25	150.00
Net returns:		
At present:		
With government's subsidy 3/	9.00	16.50
Without government's subsidy	2.40	9.90
Future potential:		
With government's subsidy	35.25	99.00
Without government's subsidy	28.65	92.40

1/ Return on land investment if owned, rented if leased, includes water costs on irrigated land.

2/ At government's guaranteed price of L.L. 0.75/kg and average present yields of 40 kg/dm on dry land, 90 kg/dm on irrigated land, future yields of 75 and 200 kg/dm respectively.

3/ Initial government production subsidies included free seed, free fertilizer and transport costs, amounting to L.L. 6.60 per dunum.

urce: Mission's calculations based on reported information.

ANNEX TABLE 7

TENTATIVE UN BUDGET FOR INDIAN HEMP ERADICATION PROJECT

USA $

Purpose	Initial Phase				
	Manyears (No.)	Per Year Cost (UN Fund)	Per Year Cost (Leb.Gov.)	Total Cost (UN Fund)	Total Cost (Leb.Gov.)
Autonomous Field Stationed Implementation Team					
International Team Leader and Staff					
1 Int. Team Leader	3	30,000	-	90,000	-
3 UN Volunteers	2½ 1/	7,500	-	22,500	-
1 LEB Administrative Assistant - Accountant	3	2,400	-	7,200	-
1 LEB Bilingual Secretary	3	2,400	-	7,200	-
Sub-Total		42,300	-	126,900	- 2/
LEB. Professional Level Staff (Agri. B.S. and M.S. Degrees) 3/					
For tree fruit establishment:					
1 Fruit Plantation Specialist	3	2,500	2,500	7,500	7,500
For livestock development:					
1 Animal Husbandry Specialist	3	2,500	2,500	7,500	7,500
For Water Development:					
1 Irrigation Engineer	3	2,500	2,500	7,500	7,500
For Economic Aspects:					
1 Agriculture Credit/Cooperative Specialist	3	2,500	2,500	7,500	7,500
Sub-Total		10,000	10,000	30,000	30,000
LEB. Technical Level Labour Force 4/					
3 Farm Machinery Oper. & Maint. Crew	9	5,400	-	16,200	-
3 Car and Truck Maint. Crew	9	5,400	-	16,200	-
2 Various	6	3,600	-	10,800	-
Sub-Total		14,400	-	43,200	-
LEB. Semi-skilled Labour Force					
3 Auto/truck drivers 5/	9	-	3,750	-	11,250
3 Livestock workers	9	-	3,750	-	11,250
3 Orchard workers	9	-	3,750	-	11,250
5 Various	15	-	6,150	-	18,450
Sub-Total		-	17,400	-	52,200
Sub-Total for Autonomous Field Team		66,700	27,400	200,100	82,200

Purpose	Initial Phase				
	Manyears (No.)	Per Year Cost (UN Fund)	Per Year Cost (Leb.Gov.)	Total Cost (UN Fund)	Total Cost (Leb.Gov.)
Consultant Services [7]					
Internationally recruited consultants [8]					
1 Detailed Land-use capability specialist	3 manmonths	-	-	7,500	-
1 Aerial-photo interpreter - agri. land use	3 manmonths	-	-	7,500	-
1 Supervisor (oriented) rural credit officer	4 manmonths	-	-	10,000	-
1 Agricultural/Cooperative Manager	4 manmonths	-	-	10,000	-
1 Groundwater development specialist	3 manmonths	-	-	7,500	-
2 Unspecified	4 manmonths	-	-	10,000	-
Sub-Total		-	-	52,500	-
LEB. recruited staff [9]					
2 Watershed Land and Water Dev. Planners	4	8,000	-	16,000	-
2 Irrigation Layout Engineers	4	8,000	-	16,000	-
1 Soil Capability Surveyor	1	2,000	-	4,000	-
1 Project Appraisal Economist	2	4,000	-	8,000	-
2 Unspecified	4	8,000	-	16,000	-
Sub-Total		30,000	-	60,000	-
Equipment and Facilities [10]					
Aerial photography and prints	-	-	-	30,000	-
Laboratory fees	-	-	-	5,000	-
Office supplies and printing	-	-	-	5,000	-
Sub-Total	-	-	-	40,000	-
Contracting Agency Overhead					
31% if AUB [11]				47,500	
Sub-Total for Consultant Services	-	30,000	-	200,000	-
Field Equipment and Transport Vehicles					
Farm tractor and set of implements [12]				6,000	-
Pick-upts				6,000	-
Vokswagens or similar				5,000	-
Landrovers or similar				8,000	-
Irrigation pumps, engines, pipes, sprinklers, etc.				62,000	-
Various				13,000	-
Sub-Total				100,000	-

Purpose	Initial Phase	
	Total Cost	
	(UN Fund)	(Leb. Gov.)
Disposables		
Transport fuel, oil, spare parts	7,500	-
Farm machinery fuel, oil, spare parts	2,500	-
Fertilizers, seeds, insecticides, herbicides	10,000	-
Seedlings and nursery stocks	5,000	-
Various	2,500	20,000 13/
Sub-Total	27,500	20,000
Buildings 14/		
Main office-stores-garage-shops-complex 15/	26,200	16,000
Sub-operation complexes 16/	16,000	32,000
Rest houses 17/	8,000	6,000
Sub-Total	50,200	54,000
Processing, handicraft and artisan equipment		
Artisan equipment	30,000	-
Dairy plant	30,000	-
Fruit drying equipment	20,000	-
Green houses	30,000	-
Sub-Total	110,000	-
Land and rights-of-way 18/	-	10,000
Contingencies	27,200	33,800
FAO Overhead (5%) 19/	35,000	-
T O T A L	750,000	200,000 20/

Footnotes

1/ Strongly supported by UN Resident Representative. 1/2 year delay allowed for recruitment and making arrangements for effective utilization. Recommended specialities - agricultural economist, agricultural engineer and agronomist. The volunteers would be assigned on both planning and field execution work as required.

2/ Governmental cost sharing in Team Leader staff not considered advisable as it might adversely effect his maintenance of the appropriate degree of autonomy.

3/ Implementation team would be recruited and placed in field at start of project to undertake immediately obviously needed work during an interim period while more detailed plans and specifications are being prepared by consultancy planning team.

4/ UN Fund support of full costs recommended in order to facilitate management.

5/ Professional staff will not be provided chauffeurs on a regular basis. Should any local staff as a matter of local practice demand personal drivers, this should be grounds for their unacceptability for employment on project.

6/ Based on wage rate of $5 per day and 250 working days per year.

7/ All international consultants to be provided under sub-contract to Agency engaged for resolving all scientific problems and for undertaking detailed soils, land use, water resources, economic, social and other surveys, and for preparation detailed plans and engineering specifications for all agricultural development aspects of Government programme for Project Area. American University of Beirut considered as ideal for this subcontract and strongly recommended by Government officials and Resident Representative.

8/ To be recruited only through secondment from field working level professional staff currently engaged in comparable successful programmes. Contacting Agency would use its own staff to the extent possible.

9/ This Lebanese staffon planning activities would not likely be required to spend more than 1/2 of their time in field on average. Therefore extra duty allowance would be less than for field execution team. Thus $4,000 per manyear and not $5,000 as used in estimated cost for field execution team. Also, in order to give contracting Agent full authority, no Government financing of basic salaries is foreseen.

10/ All transport requirements would be provided by Autonomous Field Station.

11/ The established overhead cost currently charged by AUB is 31% and is used here for the tentative budget, although this amount may be subject to negotiations.

12/ One set of farm machinery only is included in UN Fund account for trial and demonstration purposes. All civil works would be done under subcontract on Government fund accounts.

13/ Amount included under government is to serve as a government guarantee for unforeseen supplies.

14/ Government to pay for construction, UN Fund for furnishings only.

15/ The design of these building complexes should be made with a view that they would eventually become the headquarters for central farmer cooperatives. One each is proposed at Baalbeck and at Hermel.

16/ Sub-operation complexes would be needed for each of the major Wadi sub-areas of the Hermel District which fortunately correspond to tribal groupings.

17/ Rest houses for field staff. Government should be able to lease rather than construct new buildings.

18/ All lands and rights-of-way needed for project would be obtained and paid for by the Government. No estimate of cost available, but nominal amount assumed.

19/ The Director-General of FAO has agreed to lower the normal 14% overhead to 5%, except no overhead is included on UN volunteers costs.

20/ This is the Government cost sharing only in the direct work to be undertaken with assistance from UN Fund. The Government proposes in its 7-year plan for the hashish growing districts a total expenditure of approximately US$20 million.

ANNEX TABLE 8

ESTIMATED INVESTMENT AND RETURNS FOR IRRIGATED APRICOTS

(L.L. per dunum)

Year	Rent of land including water price	Raw materials (1)	Labor		Services (2)	Total cost	Yield kg/du.	Gross income from main crop (3)	Gross income from interplanting	Total net income
			N° of days	Total cost						
1	45	105(4)	10	80	35	205	-	-	100	- 105
2	45	45	10	80	35	205	-	-	100	- 105
3	45	45	10	80	35	205	75	30	100	- 75
4	45	25	4	32	35	137	250	100	-	- 37
5	45	30	6	48	35	158	450	180	-	22
6	45	30	6	48	35	158	700	280	-	122
7	45	35	8	64	35	179	1000	400	-	221
8	45	35	8	64	35	179	1100	440	-	261
9	45	38	8	54	35	182	1100	440	-	258
10	45	40	9	72	35	192	1150	460	-	268
11	45	40	9	72	35	192	1250	500	-	308

(1) Include fertilizers, manure and pesticides

(2) Include mechanized and non mechanized cultural practices

(3) At 40 P.L./ Kg.

(4) Includes 60 LL. for seedlings

Source: Prepared for the Mission by G. Boyagi, Economist, Green Plan

ANNEX TABLE 9

ESTIMATED INVESTMENT AND RETURNS FOR IRRIGATED CHERRIES

(L.L. per dunum)

Year	Rent of land including water price	Raw materials (1)	Labor		Services (2)	Total cost	Yield Kg/dn	Gross income from main crop (3)	Gross income from inter planting	Total net income
			Nbr. of days	Total cost						
1	45	105 (4)	10	80	35	265	-	-	100	- 165
2	45	45	10	80	35	205	-	-	100	- 105
3	45	45	10	80	35	205	75	49	100	- 56
4	45	25	3	24	35	129	250	162	-	33
5	45	30	6	48	35	158	500	325	-	167
6	45	30	9	72	35	182	800	520	-	338
7	45	35	10	80	35	195	1000	650	-	455
8	45	40	10	80	35	200	1100	715	-	515
9	45	45	10	80	35	205	1150	747	-	542
10	45	45	11	88	35	213	1250	812	-	599

(1) Include fertilizers, manure and pesticides
(2) Include mechanized and non mechanized cultural practices
(3) at 65 Pl/Kg
(4) Includes 60 LL. for seedlings

Source: Ibid, Annex Table 8

ANNEX TABLE 10

ESTIMATED INVESTMENT AND RETURNS FOR IRRIGATED PISTACHIOS

(L.L. per dunum)

Year	Rent of land including water price	Raw materials (1)	Labor		Services (2)	Total cost	Yield kg/du.	Gross income (3)	Total net income
			N° of days	Total cost					
1	45	70 (4)	2	16	35	166	-	-	- 166
2	45	10	2	16	35	106	-	-	- 106
3	45	10	2	16	35	106	-	-	- 106
4	45	15	2	16	35	111	-	-	- 111
5	45	15	3	24	35	119	-	-	- 119
6	45	20	3	24	35	124	-	-	- 124
7	45	20	3	24	35	124	-	-	- 124
8	45	20	4	32	35	132	35	70	- 62
9	45	25	4	32	35	137	65	130	- 7
10	45	25	6	48	35	153	150	300	147
11	45	30	8	64	35	174	200	400	226
12	45	30	11	88	35	198	350	700	502
13	45	40	12	96	35	216	400	800	584
14	45	40	12	112	35	216	400	800	584
15	45	40	14	112	35	232	500	1000	768

(1) Include fertilizers, manure and pesticides

(2) Include mechanized and non mechanized cultural practices

(3) At 2 LL/Kg

(4) Includes 60 LL. for seedlings

Source: Ibid, Annex Table 8

ANNEX TABLE 11

ESTIMATED INVESTMENT AND RETURNS FOR IRRIGATED GRAPES

(L.L. per dunum)

Year	Rent of land including water price	Raw materials (1)	Labor			Total cost	Yield Kg/dn	Gross income (3)	Net income
			Nbr. of days	Total cost	Services (2)				
1	45	45 (4)	3	24	35	149	-	-	-149
2	45	15	4	32	35	127	500	125	-127
3	45	20	6	48	35	148	750	187	39
4	45	25	8	64	35	169	1500	375	206
5	45	30	8	64	35	174	1800	450	276
6	45	35	9	72	35	187	2000	500	313
7	45	35	9	72	35	187	2000	500	313

(1) Include fertilizers, manure and pesticides
(2) Include mechanized and non mechanized cultural practices
(3) at 25 Pl/Kg
(4) includes30 LL. for seedlings

Source: Ibid, Annex Table 8

ANNEX TABLE 12

ESTIMATED INVESTMENT AND RETURNS FOR IRRIGATED PEACHES

(L.L. per dunum)

Year	Rent of land including water price	Raw materials (1)	Labor		Services (2)	Total cost	Yield Kgs/ dunum	Gross income from main crop (3)	Gross income from inter-planting	Net income
			N° of days	Total cost						
1	45	105(4)	10	80	35	265	-	-	100	- 165
2	45	45	10	80	35	205	-	-	75	- 130
3	45	25	3	24	35	129	400	100	-	- 29
4	45	30	3	24	35	134	750	187	-	53
5	45	35	4	32	35	147	1300	325	-	178
6	45	35	6	48	35	163	1800	450	-	287
7	45	40	7	56	35	176	2100	525	-	349
8	45	40	8	64	35	184	2300	575	-	391
9	45	40	8	64	35	184	2300	575	-	391
10	45	40	8	64	35	184	2300	575	-	391

(1) Include fertilizers, manure and pesticides

(2) Include mechanized and non mechanized cultural practices

(3) At 25 PL./Kg

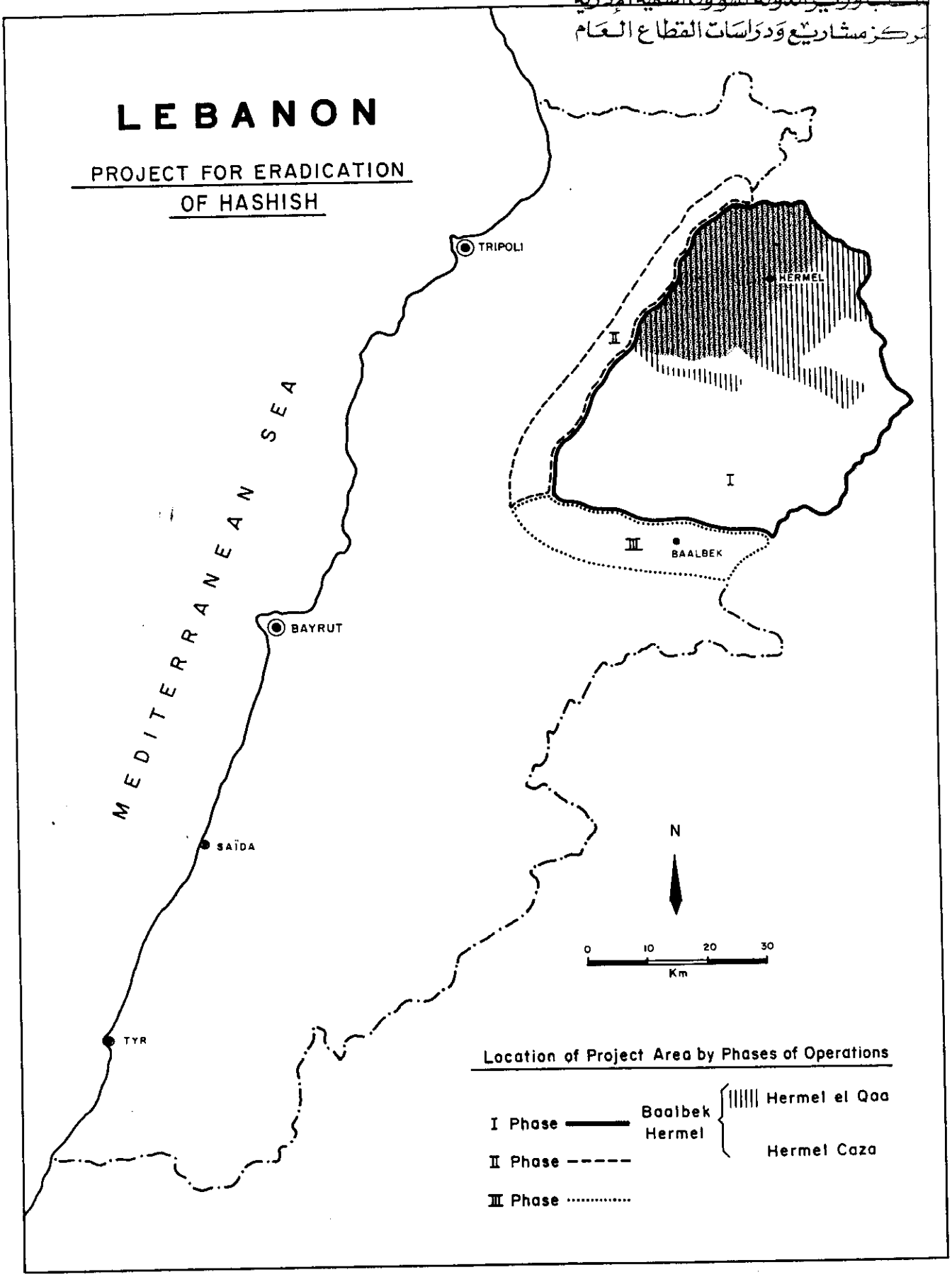
(4) Include 60 LL. for seedlings price

Source: Ibid, Annex Table 8

الجمهورية اللبنانية

مكتب وزير الدولة لشؤون التنمية الإدارية

مركز مشاريع ودراسات القطاع العام



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