Lebanon

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LEBANON

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1. General aspects

By the end of the war, the Lebanese citizens started to put more attention on the quality of their food and to claim products clean from pesticide residues and other chemicals. Organic farming started upon the demand of the local market. Of course, it started spontaneously without any regulation, norm or special technique or product. Thus, what is known on the market as 'baladi' or local/traditional product is considered more or less an organic product. These products are mostly ancestral produced without the use of chemical inputs. Other products followed to fulfill the market demand. Unfortunately, the number of farmers is still reduced and the development of organic farming is compromised. The main reasons are the following:

- the economical crisis since the end of the war, and especially the last 3 years, which reduced the demand of the market and the abandon of organic production by many farmers;
- the lack of investments in the agricultural sector in general: both the government and the private sectors don't give priority to agriculture since the beginning of the war;
- the lack of information and know-how on organic farming at the farmer's level and the absence of regulations and extension service at the ministry level;
- the absence of any regulation concerning organic farming, and the absence of foreign inspection and certification bodies.

Nevertheless, many potential points should be mentioned:

- the climatic conditions of the country are optimal for many agricultural crops such as: sub-tropical and tropical fruits (avocado, anona, banana, citrus and loquat), Mediterranean crops (cereals, legumes, fig, olive, grapevine, almond and pomegrenade), temperate fruits (apple, pear, cherry, peach, plum and walnut) and vegetables (potato, tomato, cucumber, watermelon, melon, strawberry, lettuce, cabbage, beet, onion and garlic);
- the agro-industrial sector is well developed and is able to absorb a part of the production;
- the will of many farmers to convert into organics if the marketing of their products is assured;

- the accessibility to information for engineers and the possibility of importing necessary techniques for organic production;
- the awareness of a big part of citizens to the necessity of having clean and healthy products.

The aspect of organic farming is very heterogeneous and changes from a situation to another, but we can define three types of farmers in Lebanon:

1) Amateurs that do genuine organic farming due to their personal conviction and awareness: They are not real farmers. Most of them have access to foreign information and techniques through their original career. These farmers lack organization, and need a technical support to resolve their field problems. They have a small-scale market and do not count on their production to make money.
2) Farmers that do organic farming on an economical scale, due to their awareness and conviction: These farmers count on their production to live. They also lack information and need better marketing channels and evaluation for their products.
3) Farmers that - ipso facto -do organic farming on an economical scale: these farmers usually do not use any chemical input because either it is not feasible or they cannot afford buying those inputs. This is the case of non-irrigated crops (cereals, legumes, "mekti", garlic, watermelon, grapevine, cherry, apricot, almond, mulberry, olive and apple) and forest products (pine nut, carob, sage, oregano, sumac and blackberry). These farmers are numerous and can reach more than 30% of the number of exploitations in some areas. They do not have any scientific knowledge about organic farming.

In Lebanon farmers do lack of all kinds of support: no legislation, no norms, no certification, no extension service, no material or technical support, no marketing or advertising support, neither from the state, the private sector nor from foreign companies.

A few foreign experts ensure some knowledge transfer to some local agricultural engineers and farmers, within the umbrella of Non Governmental Organizations (NGOs) such as Greenline and MECTAT (Middle East Centre of Transfer of Appropriate Technology).

2. Regulatory aspects

The legislative aspect of organic farming is still not defined in Lebanon. Actually, there are no legislations or norms for organic farming. There are no organisms that are inspecting and certifying the production either.

The small-scale market counts on the honesty of the farmers, while some supermarkets claim certification and prefer to import their products. As there are no organic farmers association or cooperative, the legislative process is very slow.

LIBNOR is the official organism responsible for the elaboration of norms and standards.

Greenline is an NGO that seeks to make a cooperative so as to make a certification by a foreign organism feasible on the farmers' scale.

MECTAT, the Ministry of Environment and the United Nations Development Programme (UNDP) are trying to launch a national project to define the norms and legislations of some organic products (Citrus, Olives, and Vegetables) and insure the inspection and certification program.

Choutoul Est. is planning to open a laboratory to test pesticide residues in the products that they buy from the farmers.

3. Structural aspects

3.1 Farmers and type of production

As mentioned before, there is no statistical information about organic farming in Lebanon. This induced me to make a survey on the field to gather some information about the situation of this sector.

The number of farmers cannot be defined because there is no certified farming or products, but there are some farmers who can be considered as potential organic farmers if certification is ensured. Many farmers are willing to convert into organic farming too, if certification and market are available.

The overall surface of organic farming cannot be defined, though the total cultivated area by the mentioned farmers does not exceed 160 ha and 90 ha in conversion, out of 247 934 ha (total cultivated area of Lebanon in 1999). The farmers grow several crops at the same time and do not have a notebook, which make the estimation of the surface area dedicated for each crop hard to define. In Annex 1 are reported the main organic producers.

Choutoul Est. is a company which has been buying products of different farmers producing a wide range of crops and distributed in all the country (table 1).

Many others are ipso facto growing without using any synthesized chemical products, and selling part of their production as organic, like the cooperatives of Taraya and Aarsal.

In Taraya, wheat, lentil, chickpea, grapevine and mekti are grown "organically" on 1200 ha approximately. Almond, fig and bean are produced but only for house consumption. In Aarsal, some of the cherry production is sold as organic.

Table 1. Organic products in Lebanon (Choutoul Est., 2001)

Location	Surface (ha)	Type of product
Akkar	1.2	almond
Baalbek	8	vegetables, onion and garlic
Bekfaya-Tamich	1.4	vegetables in greenhouses
Chtaura	-	poultry (20 000 chicks/year)
Damor	3	banana, Citrus, fava bean and vegetables
Ebl el saqi	14 (in project)	nectarine, peach, grapevine, vegetables and sugar cane
Falogha	1.7	plum
Hermel	-	pomegrenade
Jiyeh	1.4	vegetables in greenhouses
Karkha	3.2	lemon and sour orange
Nabaa el Safa	-	peach and nectarine
Qaa	18	watermelon, melon, cucumber, tomato, eggplant and 500 sheep for meat production
Rachaya el Fakhar	7	olive and olive oil
Sarafand	1.8	citrus and vegetables
Tall Abbas	20	wheat, potato, grapevine and vegetables
Tarshish	4	tomato, lettuce and pumpkin

Crops grown traditionally without the use of chemical inputs could give potential organic products. These crops include the typical Mediterranean non-irrigated or partially irrigated crops (table 2).

Table 2. Traditionnaly grown crops in Lebanon (Ministry of Agriculture, 1999)

Crop	Surface (ha)	Crop	Surface (ha)
Almond	6500	Lucerne, Vetch and other forage crops	1700
Apricot	5500	Mekti	-
Barley	12 600	Melon	900
Cherry	6100	Mulberry	-
Chickpea	2300	Olive	51 100
Fig	3500	Onion	2800
Garlic	600	Pomegrenade	1300
Grapevine	15 500	Walnut	700
Janarek (*Prunus cerasia*)	no statistics	Watermelon	3500
Lentil	1400	Wheat	38 800

Other crops are grown but, due to the intensive agricultural practices, they require (irrigation, fertilization, weed control and pest management), their conversion into organic farming is difficult on a short-term perspective.

3.2 Product price

The information on farm price is not available for all crops, especially when most of the products are either sold at the same price as conventional products, or consumed by the farmers (table 3).

Table 3. Organic products prices

Product	Farm price (US$/kg)	Product	Farm price (US$/kg)
Almond	1.16	Mekti	1.16
Green bean	4	Melon	1
Beet	0.33	Menthe, rocca and oregano	0.33-0.5/bouquet
Broccoli	1.33	Onion (green)	1.33
Cabbage	0.8	Pepper	2.75
Carrot	0.66-0.8	Persil	0.16-0.66/bouquet
Cauliflower	1	Potato	0.33-0.66 (1999)
Cherry	1-1.16	Pumpkin	1.33
Cherry tomato	3.33	Radish	0.2
Chickpea (dry)	1-1.16	Sage and dried herbs	1.33/ 250g
Citrus	1.33/case	Strawberry/Raspberry	6.66
Cucumber	0.66-1.33	Tomato	0.33-1.33
Eggplant	1	Turnip	0.25
Grape	1.33	Zucchini	0.8-1.33
Lentil	1-1.16	Watermelon	0.43
Lettuce	0.66-1.33/unit	Wheat	0.75-1
Processed products			
Kishk (grinded wheat and yogurt mixture)	6.7 (fresh) 13.4 (dry)	Labneh (yogurt cream)	5
Olive oil	100/20liters		

3.3 Wild products

The main collected wild products are:

Pine nuts (Pinus pinea) and Carob pods (Ceratonia siliqua): pine nuts are collected from the pine forests found in the central part of the country, on the coastal slopes of Mount Lebanon from sea level up to 1500 m. The estimated exploited area is only 6100 ha, giving a production of 16 500 tons of nuts. Carob trees are found on the coastal slopes up to 800 m either spontaneously in the Mediterranean oak forest, or grafted and planted near olive orchards. The estimated exploited area covers 700 ha and the production of pods is around 7400 tons. Pine nuts and carob molasses are used for culinary purpose in the local market. A part of the carob molasses is exported.

Many other plants (or parts of the plant) are collected for culinary or medical use. Most of these species are found:

- in all mountains under 1500 m: *Campanula rapunculus, Cichorium intybus, Eringium creticum, Malva sylvestris, Matricaria chamomilla, Melissa officinalis, Micromeria myrtifolia, Origanum syriacum, Pyrus syriaca, Rosa canina, Tanacetum parthenium, Malva sylvestris*;
- from sea level up to 2000 m on coastal slopes only: *Alcea setosa, Crataegus monogyna, Malus triloba, Prunus mahaleb, Rhus coriaria, Taraxacum officinalis*;
- in humid areas: *Eleagnus angustifolia, Mentha aquatica, Mentha*

*pilegium, Nasturtium officinalis, Rubus tomentosus, Rubus collinus, Rubus hedycarpus, Tussilago farfara, Urtica dioica, Urtica uren*s;

- in alpine areas (over 1500 m): *Ferula hermonensis, Gundelia tournefolii, Rheum ribes*;
- under the Mediterranean forest only (from sea level up to 1000 m): *Laurus nobilis, Myrtus communis, Salvia fruticosa*.

Many other species have culinary, aromatic or medical properties, but they are not explored at all by man (i.e. *Salix alba, Juniperus oxycedrus, Capparis spinosa, Lavandula stoechas*).

3.4 Processed products

Agro-industry is a prosperous sector in Lebanon, but unfortunately, most of the raw material is imported. The main agro-industries that are using local ingredients and that can give a potential organic product in the future are:

- Olive: organic oil production is done in the same unit that extracts conventional olive oil. There are 485 units and scattered all over the country (50% in the North), especially in the main producing areas: Koura, Zgharta, Batrun, Aakar, Hasbaya, Marjayoun, Bent-Jbeil, Tyr, Chouf
- Wheat: grinding wheat produces Borghul, and drying a mixture of the precedent with yogurt produces Kishk. Both products are home-made or produced by small-scale industries. These industries are mainly found in Bekaa valley area. Only a few farmers produce organic Borghul and Kishk (mainly E. Ayub).
- Carob molasses extracted from carob pods in small extraction units are found mainly in Batrun, Jbeil, Metn, Chouf and Tyr areas. Only three factories are registered at the Ministry of Industry and they export some of their production of molasses and carob seeds.
- Grapevine: although vinegar, molasses, arak and wine are produced on small scale, there are 84 factories that produce most of the alcoholic drinks (wine and arak) mainly in the Bekaa valley (Zahle, West Bekaa and Rachaya) and Mount Lebanon (Keserwan and Metn), but no organic products are mentioned. It is to mention that Lebanese wine is famous Worldwide and 40% of the production is exported (more than three million bottles). Most of the vineyards producing wine and arak, are grown without using synthesized chemicals or fertilizers.
- Many fruit jams, and syrups are produced, but very few can be considered organic (sugar free blackberry jam). Others are produced by using conventional sugar (mulberry syrup, apple juice, apple,

quince jam and apricot jam). Antoine Chamoun (Jwar-el-Hawz/Baabda) is a potential organic producer of these items.

- Goat milk gives organic dairy products (E. Ayub in Kfarmeshki/Bekaa). Many shepherds are also producing labneh, cheese and cream from traditional farming, counting only on natural grazing land, and not using any chemicals for veterinary uses.

Most of these units are present at a regional scale, and thus are not registered at the Ministry of Industry. Many products are also homemade which makes impossible the estimation of the quantity of production and the number of processing units.

There is no processing unit dealing only with organic products and having any kind of certification.

According to Choutoul est. ther is a project Factory in the Metn area to process organic products. This factory already processing conventional products. The main items will be: carob molasses, tahina (sesame oil and sauce), fruit jams, pomegranate syrup, grape molasses, Borghul, kishk, apple and grape vinegar.

3.5 Associations

Associations dealing with organic farming (production or marketing) do not exist, but some agricultural cooperatives are trying to market their products as organic (Cooperatives of Taraya and Aarsal).

The first organic farming cooperative will be founded soon, with 8 members by the help of Greenline and the Ministry of Cooperatives. The main activities of this cooperative will be ensuring the inspection and certification services and the selling of their products (vegetables, olive oil, wheat and lentils).

3.6 Research

LARI (Lebanese Agriculture Research Institute) is the official research organism. It has several branches dealing with food quality, animal husbandry, plant protection, soil science, irrigation, plant breeding and plant production (cereals, olive, grapevine, citrus, almonds and greenhouse crops).

The National Center for Scientific Research (CNRS), American University of Beirut (AUB), Lebanese University (LU), St Joseph University (USJ) are also involved in scientific research.

AUB, LARI, LU and the ministry of agriculture are working on the biological control of Citrus pests (Leaf minor, Aphids, Mediterranean Fly and Tristeza Virus) in collaboration with the Citrus Board in Tartus-Syria.

LARI has also many programs and research lines that could be converted into organic farming such as:

The introduction of Encarsia formosa for white fly control; Population study on Cales noaki and other predators and parasitoids of Citrus pests; Biological control of the Mediterranean fruit fly etc.

4. Agronomic aspects

4.1 Management of soil fertility

This is the major problem for organic farmers due to the lack of organic components for composting. Forage crops are not always available in Lebanon.

Crop rotation and soil fertility are not taken into consideration when planting a crop, due to the small scale land and economical reasons.

Animal production is not enough to produce manure for all farmers, and mixed farms (crop and animal production) are not common in Lebanon. The manure is either applied fresh or dry but rarely as compost.

Green manure is not common and the only species used are mainly cereals (wheat and barley) and legumes (vetch, lucerne and fava bean).

Some of the amateurs produce their own compost, but due to their limited resources, they cannot increase the cultivated surface. Besides, small farmers, or orchard cannot make their own compost or make a crop rotation.

Some farmers import organic compost (with 18 units of nitrogen added).

Two existing factories produce compost, using mainly the remaining of olive oil, carob molasses and sugar beet extracts (NPK content: 2-1-2).

4.2 Control of pests and weeds

Pest management is the main problem for many organic growers: the main pests are leaf miners, mites, aphids, Mediterranean fruit fly, olive fly, mildew, blights, rust and botrytis.

Under greenhouses, pest management is either very expensive or not feasible (Dakkache, 1998).

Farmers use only copper and sulfur as chemicals to prevent fungi and mites attacks. They also try to use cultural practices such as protecting the leaves of some vegetables from leaf miners by a fiber film or cover. Others use some traps (for flies), or try to release natural predators and parasitoids (in citrus orchards against aphids, citrus leaf minor and mealy bugs).

Bacillus Thurengiensis is also used against Lepidoptera worms.

Most of the organic amateurs do not have any knowledge or agricultural background to resolve pest management problems.

Weed control is done mechanically (by hand or ploughing).

4.3 Availability of technical means

Most of the material and techniques are imported from European and North American companies (France, Italy, UK, Germany and USA). Some organic technical means are imported only on personal command. Thus, organic pesticides, traps, fertilizers and compost are not very common, but could be always be imported by local companies.

The most commonly used organic pesticides are: cooper, sulfur and Bacillus Thurengiensis.

4.4 Authorized material

As there is actually no norms and certification, there is no mention of authorized or non-authorized material in Lebanon.

4.5 Origin of the propagating material

Most of the amateurs import their seeds (mostly conventional), especially for vegetables as they grow them on a small scale.

Local cultivars of vegetables, cereals and legumes come from local conventional seeds. This is the case of tomato, white cucumber (Mekti) and white zucchini which are produced by the farmers themselves or by specialized farmers or companies.

Fruit trees are propagated in local conventional nurseries, using non-certified material. Recently some companies importing new varieties of fruit trees, certified as “virus free” from France and Italy (vines, pome and stone fruits).

4.6 Local companies producing technical means

National companies producing compost at a large scale is DOUBALINE in Aanjar in the Bekaa valley, and MDAWAR establishment in Dekwaneh, Beirut.

Companies producing seeds and propagating agricultural material are almost absent. Only HAYEK establishment in Bsouss (near Beirut) has a tissue culture laboratory to produce strawberry, banana and ornamental plants.

AGROTEC has a factory of agricultural sprayers. It is located in Bechmezzine in Koura. Many companies produce agricultural tools and they are mainly located in the Bekaa valley (the final list of these

factories will be made upon request at the Ministry of Industry by the end of December).

5. Market aspects

Marketing of organic products is not developed like in Western and Northern Europe.

The term "organic" is mixed up with "natural" and with "dietetic", we can find organic products hidden and mixed with other products used for special diets or with natural products known as "baladi".

These products started to have a place among the supermarkets and the dietetic shops of Beirut and its suburbs (Abou Khalil, Basha, Bechara, Coin du Régime, Goût Frais, Smith, Spinneys, Tony Maroun) but this experience failed in most of the supermarkets and contracts didn't last for more than 6 months.

Marketing of the products by the farmers themselves is also common.

Some farmers have started to send their products to restaurants. While Crepaway, a fast food chain (6 branches in Beirut and suburbs) is studying a project for shifting into organic food.

Trying to find a solution for marketing the products, Choutoul Est. which is the main provider for the supermarkets has started with some associates to open specialized shops in Beirut and suburbs (first shop in Jisr el Bacha will open in January 2001). On a long-term project, a gross market will be established in Beirut.

As mentioned before, there are no available data about local consumption, or importation of such products (because all products are mixed together). But it is known that all the organic farmers sell their production for the local market only.

There is no export of organic products because there is no certification from one side, nor big farmers or producers' associations from the other side.

Potential organic products are many, including carob molasses, pine nuts, sage leaves and other wild products that are already exported.

Finally, due to the modesty of the production, there is no specific promotion for any product or farmer. Anyway, until now the demand is much higher than the production.

This does not mean that the farmers do not suffer from marketing problems. The major constraints are:

- the modesty of the production diversity and quantity of a single farmer in a matter that he cannot fulfill the needs of a supermarket for a season or all year round;

- the absence of cooperatives, merchants or boards that can deal with the farmers to buy their products and resell them to the supermarkets and specialized shops and to make promotion for these products;
- the absence of any certification and labelling to install a certain trust between the farmers and the market.

Annex 1 Main organic producers in Lebanon

Farmer	Surface (ha)	Location	Type of products
E. Ayub	100	Kfarmeshki (West Bekaa)	Cereals, legumes, watermelon, melon, grapevine, zucchini, tomato and other vegetables
			Cattle (goats) for dairy products
B. Badawi	0.3	Lehfed (Jbeil)	olive (and olive oil) and apples
M. Bassil	-	Smar-Jbeil (Batrun)	olive (and olive oil) and almonds
R. Bustani	3.5	Debbiye (Chouf)	vegetables
F. Daw	0.16	Fatri (Jbeil)	tomato, cucumber and lettuce
P. Estephan	0.1	Ghosta (Kesrwan)	vegetables
E. Harb	3	Tannureen (Batrun)	lettuce, cabbage and other vegetables
A. Kanaan	1,9	Baalbek	wheat and lentils
K. Khoury	9.5	Zgharta	citrus, olive, avocado, anona, mango, passion fruit, jujube and litchi
A. Melki	6	Bterram (Koora)	olive oil
H. Mouhajer	-	Hoch Tell Safia (Baalbek)	grapevine, watermelon and legumes
C. Nakho	6	Hammana (Baabda)	grapevine, apple, peach, tomato, broccoli, lettuce, sage, potato, pumpkin, pepper, bean, raspberry and other vegetables
A. Zaaiter	40	Kfar Dan (Baalbek)	potato
R. Zouheiri	0.25	Baaklin (Chouf)	Olive (and olive oil)

Annex 2 Source for the collection of data and information

Information sources	Contact Person	Type of the information source		
		Tecnical-agronomic	Market	Legislative
Ministry of Agriculture	Jean Estephan Tel: 961 3814109	General statistics		General aspects
LARI	Tamim al Takash Tel: 961 682471	Research lines		
Ministry of Environment/Methyl bromide alternatives project	Garo Haroutunian Tel: 961 3333711			Project with UNDP and Mektat
Ministry of Industry	Paul Masri Tel:9611 426607	Processing units and technical means		
Greenline (NGO)	Adnan Melki Tel: 961 3641174	Introduction to farmers	General aspects	General aspects
Choutoul Est.	Toni Zalzal Tel: 961 3800318	General statistics	Constraints and projects	
Naturalia	Rania Kazan Tel: 961 3745362		Constraints and aspects	
Daccache Est.	Ghassan Asmar Tel: 961 9440770	Feasibility study on tomato and cucumber grown into organic		
Farmer	E. Ayub Tel: 961 8530080	Type of production, plant protection constraints	Type of marketing	
Farmer	R. Bustani Tel: 961 3605088	Type of production, fertilization and protection constraints	Marketing aspect	
Farmer	F. Daw Tel: 961 3456336	Type of production	Marketing constrains	
Farmer	P. Estephan Tel: 961 9262069	Protection constrains		
Farmer	E. Harb Tel: 961 3772255	Type of production		
Farmer	Kanaan Tel: 961 3894918	Type of production	Marketing constraints	
Farmer	K. Khoury	Type of production, protection and fertilization aspects	Marketing constraints	
Farmer	C. Nakho Tel: 961 5530709	Type of production, protection and fertilization aspects	Marketing aspects	
Farmer	R. Zouheiri Tel:	Type of production		
Taraya cooperative	H. Hamiyeh Tel: 961 8330284	Type of production, fertilization and protection aspects	Marketing constraints	
Aarsal cooperative	Q. Al Shabb Tel: 961 8240275	Type of production		