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Agricultural research in Lebanon

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Agriculture in Lebanon is very modest but not negligible as it represents about 8 to 9% of the GDP. More than 150,000 cultivated areas covering close to 600,000 ha play a role in land planning and help to counterbalance the excessive attraction of the capital, Beyrouth. Of course, agriculture in Lebanon can only partially provide the people's food needs. So Lebanon imports nearly 80% of its needs in meat, milk and cheese. It also imports 90% of the wheat and annually pays 150 million Lebanese pounds (L£) for the purchase of wheat in order to subsidize the price of bread.

In a free enterprise country, agriculture contributes to the country's economic life only when its products are very competitive in price and quality. This is possible only if Lebanon adopts an agricultural policy taking into consideration future perspectives. Furthermore, only a national agricultural research institution can be at the government's diposal and serve as a lever of orientation for the agricultural policies of the country.

For a long time, Lebanon has played an important role inside as well as outside of the country. It has always been (and still is) capable of providing to the world active and productive people: entrepreneurs, engineers, doctors, merchants, etc. These Lebanese have contributed to making Lebanon a bright and influential country regionally and worldwide. Now this same Lebanon must have its own agricultural research and its professionals their own research institutions.

However, agricultural research requires means, which vary according to the country's richness and variety of products, but are estimated at 1% of the gross agricultural revenue. In Lebanon, the budget of the country is L£11 billion (1985). Of this, the agricultural budget is about L£130 million of which L£23 million were used for agricultural research. Agricultural production is estimated at L£6 billion (1985) and 1% of this would equal L£60 million.

It is thus necessary to establish a research system whose costs will not be more than the available means. Another possibility is a selective system that necessitates choices to accomplish this task. For this reason, we now choose applied research which is dictated by priority socio-economic goals instead of scattering the limited means over all sectors which would condemn Lebanese agricultural research to technical and scientific sterility.

But before envisaging the modes of this applied research, let us examine what the present Lebanese research situation is.

I - Lebanese Research Institute of Agronomics (LRIA)

Agricultural research in Lebanon is undertaken by LRIA which has affiliated organizations throughout the whole country:

- Fanar, near Beyrouth (phytosanitary research, vaccines, vegetable physiology, greenhouses, etc.),

- Tall Amara, in Bekka (vegetable production, cereals),

- Terboll, in Bekka (animal production),

- Kfarden, in Bekka (arid zone, ICARDA),

- Abdet Kfarchakhna, in the north, (arboriculture, citrus fruits, irrigation, olives, etc.),

- Tyr Center in southern Lebanon.

All of these affiliated organizations have recently been occupied by armed troups and equipment and documents have been destroyed. Activity is almost non-existent and the personnel has refused to work there due to the dangerous situation. This situation is obviously not favorable for LRIA.

Researchers

LRIA has a number of good researchers (55 in total, aided by 60 technicians), but during the recent events, the better ones among them were obliged to leave the country. So we have to persuade them to return to resume their place within LRIA. It is also necessary to recruit highly-qualified researchers of a new generation, providing them with the means and environment for the full development of their potential.

To achieve these objectives, the choice of those researchers should be selective and beyond any political pressure. The recruitment should be based on examinations and tests monitored by a neutral and pressure-free jury. In other words, we should recruit the best available people and, by means of reciprocal obligations in their contracts, try to keep them as long as possible within the Institute.

In conclusion, we can actually say that LRIA is practically paralyzed and we all await reorganization. In the future, we think that the work entrusted should be within LRIA's capability and without too many risks: that is to say, applied research.

Applied research

Generally, a researcher does not choose his subject of research; it is the agricultural reality that decides for him. Thus Lebanese researchers are charged with work which is both useful and difficult. This is to contribute to the quick agricultural development of the country and constitute an enticing scientific challenge. But nothing prohibits such applied research to have close links with fundamental research systems.

In fact, certain subjects based on socio-economic objectives can open up channels for the knowledge of essential biological mechanisms. In this case, a researcher should have the right to continue his research as far as the means allow.

II - Research priorities

Lebanese agriculture is highly varied in its products, just like its natural conditions (from beets to bananas). But this small country does not have the financial means to envisage a full range of products. That is why a choice is necessary and the criteria on which this choice is based are multiple, varied and sometimes even contradictory; but often the final decision depends on politics. Nevertheless, we can always envisage the following criteria:

- economic importance of a product;

- urban importance (to enliven a poor and populated region, for example, ovine breeding in Bekka); and

- use of poor land (forests, pastures, etc).

Thus, it is necessary to give priority to products which have the best value for the people and the Lebanese economy.

Sectors to receive scientific aid

By order of priority we have:

1. Fruits

Lebanon has about 30,000 ha of orchards, 12,000 ha of citrus fruits, 13,000 ha of apple trees and apricot trees, 25,000 ha of vineyards and 35,000 ha of olive trees. It exports 50% of its apples, 60% of its apricots and 25% of its cherries.

The surplus of Lebanese agricultural products is exported primarily to Arab countries. The priority of this sector can be justified and is even necessary. Thus it is of prime importance to modernize fruit production and increase its yield, especially when sales are no problem and competition is almost inexistent.

2. Vegetables

The production of Lebanese vegetables, a dozen kinds, is about 300,000 tons over 20,000 ha. The cultivation of any one of these vegetables does not have enough economic value to justifiy the research expenditure, except potatoes which cover nearly 10,000 ha. Every year, more than 30,000 tons of seed potatoes are imported. We believe that it is in Lebanon's interest to be able to produce these locally and to even export them to neighboring countries who also import seed potatoes.

3. Wheat and cereals

Lebanon's annual consumption of wheat is about 400,000 tons, but it produces only 50,000 tons, i.e, 1/8 of the consumption. We have in Bekka and the north of the country, on non-irrigated land which is inadequate for cultivation, nearly 50,000 ha of land which is used for cultivation of cereals. We should note that Lebanon has made progress by producing about 25,000 tons of commercial seeds. Now nothing hampers the possibility of increasing this production and eventually selling it to foreign countries.

In Bekka we can also improve some marginal land and use it to increase cereal production. We can achieve this goal by the modernization of cultivation means and by extensive use of agricultural machines.

Particular attention should be paid to grain vegetables for human food such as beans, lentils, chick peas, etc. These grain vegetables are rich in protein and constitute the main food in the countries of this region. So it seems opportune to ask for research aid in this sector.

4. Animal breeding

a) *Poultry farming*: This sector had its golden age in Lebanon from 1960 to 1975 and LRIA certainly contributed to its development. During this period, Lebanese exports of eggs and chicken were very important (23 million chickens, 1 billion eggs). But following the recent events, this sector was badly damaged and production could no longer deal with foreign competition. We are now happy to satisfy only the country's domestic need.

b) Scientific effort should be concentrated on *ovine breeding* (Ouassi race) and *caprine breeding* (Chami race). Effort in this domain is desirable because more than 125,000 ovines and more than 350,00 caprines are concerned, which are bred for meat, milk and dairy products. Unfortunately, these animals have difficulty finding their food due to the shortage of adequate pastures.

5. Other research sectors

c) Besides this production, Lebanon has some general problems linked with agriculture in general. We mention agricultural research, statistics, land study, irrigation (which is of particular importance), cultivation systems (land-sun-water), greenhouses, etc.

All research of this kind could be concentrated in a department called the *Department of Physical Environment.* On the contrary, mechanization and promotion of agricultural machines should be taken in charge by a qualified unit in order to determine the adaptation of these machines to Lebanese agriculture.

Three other activities should also be considered: diagnostic and production of vaccines, production and control of seeds, analysis (land, foods).

LRIA has played an important role by ensuring competence in these kinds of activities, which we can call peripheral to research. Nonetheless, these activities have drained the means of LRIA and has diverted it from its basic work. The cost of these activities should be covered by people who benefit from them.

III - Future of LRIA

It seems obvious that research work should be entrusted to an autonomous office that plays the administrative and decentralized hierachical role that allows agricultural research to better achieve its mission with a real financial autonomy which facilitates the purchase of products and materials.

Such autonomy does not mean independency in the hierarchical sense in its internal organization; but a liberty of action according to decisions which will be taken during a weekly meeting of the administration, uniting the Director and his scientific colleagues and unit heads.

The main research directions, determined in cooperation with the different units involved (Ministry of Agriculture, National Scientific Research Center, the University and even the representatives of farmers), are implemented under the responsibility of the General Director.

By participating in the identification of agricultural policies, the researchers can on the one hand improve the content and, on the other hand, be better situated for assuming the continuity.

In order to do its job well, LRIA should include the following departments:

- Plant improvement, with three laboratories (fruit and vegetables, cereals and grain vegetables) and 15 researchers;

- Phytosanitary research, with three laboratories (vegetable pathology, zoology, weeds) and 12 researchers;

- Physical environment, with four laboratories (earth analysis, irrigation, greenhouses, cultivation systems) and 15 researchers; and

- Animal breeding, with four laboratories (selection, food, pathology and parasitology, systems of breeding and pastoralism) and 12 researchers.

- We shall add to these departments a forest research laboratory, an economics laboratory and a documentation centre.

All these units will be directly linked to the head office. The entire organization would thus consist of 16 laboratories, 60 researchers and a documentation center.

Technicians

LRIA is understaffed in technicians who must assist researchers. For the time being, it has only 60 technicians. We propose to increase this number to 120 or two technicians for every researcher. The supplementary cost would be:

60 x 30,000 = 1,800,000 L for technicians
5 x 80,000 = 400,000 L for researchers

2,200,000 L

Material

To begin, we shall reconstruct and reorganize LRIA, restore its documentation, and re-establish its contacts with foreign countries. All of this is not within the capability of the Lebanese government. Thus it is necessary to ask for international help to find the necessary funds. The present donation is 3.5 million L. The government subsidy would be increased to about 25 million L.

Links

LRIA should have linking and coordination systems with other agricultural research units:

1. With higher education (Faculty of Agriculture and Veterinary Medicine)

It would be necessary to harmonize the research done by the professors and that done by LRIA. We shall find ways to collaborate closely collaborate. To do this, LRIA and the above mentioned faculty shall be on the same campus so that links will be efficient and fruitful.

2. With the American University

This establishment represents an important scientific force (26 professors) and every year there are 52 M.Sc graduates. Its activity extends over 100 ha (1/3 is irrigated); it has a highly-equipped workshop for industrial and food research. But it has no links with Lebanese institutes. Thus we can entrust it with contractual work on some subjects that LRIA cannot do.

3. With NSRC (National Scientific Research Center)

The work of NSRC is to coordinate the activity of the different scientific institutions. It provides budgets, finances the training of researchers and ensures their recruitment. Its annual budget is about 10 million L. However, these modest material and monetary possibilities hamper its activities in fixing scientific policies and consequently prevent it from doing its principle task of coordination and animation well.

4. With extension work

Agricultural research should not be transformed into an extension service. That is why Lebanon should have its own autonomous extension service that is closely linked to agricultural research (retraining of extension agents, editing of written documents).

We thought that, before discussing relations between LRIA and interior research institutions, it would be necessary to say a few words about its relations with the outside. Thus, its international contacts shall be more than participating in conferences, seminars, training courses, appropriate training of Lebanese researchers, following advanced courses for researchers during a long period (three to five years) in laboratories of foreign countries. International organizations can be a big help in the achievement of this program. By this we mean ICAMAS, EEC, FAO, AOAD, ICARDA, etc.

Conclusion

In its present state, LRIA cannot achieve its mission. It needs to be rehabilitated. This means that we should establish a program which ensures:

1. resumption of work by its personnel,

2. nomination of new chiefs at all levels,

3. regrouping of departments (Terboll, Tall, Amara, Fanar) and (Abdeht, Kfarchakhra),

4. reconstruction and reorganization of departments and laboratories,

5. recruitment of new researchers.

All this requires a budget which Lebanon will find due to its dynamism and international reputation. Unfortunately, we shall have to wait for the re-establishment of peace and security on our small paradise of land in order to see the birth of this organization, something that we hope to witness in the very near future.