ADAPTATION OF AN AGRICULTURAL EXTENSION SERVICE
TO CHANGING CONDITIONS: The Case of Israel

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ABSTRACT

The first agricultural extension services were created, when previous attempts to spread know-how were no longer appropriate. One of the major criteria to evaluate existing extension systems is to analyze, how they adapted their services to different client groups and to changed agro-technical, economical and social circumstances. The paper analyzes what major changes were needed in the Israeli extension system, and how the extension service adapted its work to these changes. The major challenges were: how to work with new immigrants and growers in different settlement types, how to upgrade advisers’ formal and informal knowledge level. The most critical problem came with serious cuts and governmental demand to privatize the agricultural extension service.

Keywords: agricultural extension, instructional technology, settlement types.

NEED TO ADAPT

Agricultural extension, as significant social innovation, had two precursors: (1) Societies for the Diffusion of Useful Knowledge, which were sometimes also known as Agricultural Societies. These were created towards the end of the 18th century by well meaning humanists, who held meetings “to enlighten peasants”. (2) At the same time, the first agricultural boarding schools with modal farms were established. In both cases, the new knowledge reached only “progressive” farmers. However, these change agents could not help in a time of an emergency. When the potato blight epidemic in the 1840s caused the Irish Famine, the British Viceroy of Ireland urged the already existing Royal Agricultural Improvement Society of Ireland to appoint itinerant lecturers to travel around the most distressed districts to inform and show small farmers how to grow nutritious root crops other than potatoes. Thus, the first national agricultural extension service was created, funded about half by landowners and charitable donations, with the remainder coming from government-controlled funds.
Soon, other countries adapted the idea of formal agricultural education and of “itinerant teachers” to their specific circumstances. In the USA, President Lincoln signed the Morrill Act, which established Land Grant Colleges in 1862, still during the civil war. The U.S Cooperative Extension Service was created in 1914, and each U.S State adapted the programs to fit its needs. The European colonial powers set up advisory services in their colonies, focusing mainly on tropical crops, which were exported to their home country. Lauren Rouse et al (2014) have reported that students enrolled in a College of Agriculture at Land-Grant Texas A & M University, USA are found to have Eurocentric attitude about North Americans and European Agriculture. Eurocentrism is a tendency to feel that my culture, beliefs and practices are superior than others. This only indicates that US Universities are advocating for the globalization of their curriculum to be more multicultural.

In 1843, the first Agricultural Experiment Station was established in Rothamstead, near Cambridge. Soon, research on the use of fertilizers revolutionized farming. Decolonization, new technologies, urbanization, socio-economic developments and environmental concerns forced extension services to adapt their approaches, contents and methods to new parameters- or lose their impact.

In the following sections, changes in the Israeli extension system will be discussed with a review of the changes in agriculture, which made it necessary for the agricultural advisory system to adapt to changes situations.

UNDER TURKISH AND BRITISH RULE (1516-1948)
For centuries, Palestine had a primitive agrarian economy. Peasants grew mainly crops for their own consumption and reared animals for milk and wool. In the second part of the 19th century, when Jews in Eastern Europe were persecuted and many were murdered during the pogroms, a group of survivors decided to move to the Holy Land and become farmers. At about the same time, also a group of Jews in the old city of Jerusalem, whose economic situation had deteriorated, wanted to do the same. Both groups did not want to live like the peasants, but they had no agricultural training. In 1870, a French Jewish organization set up an Agricultural School near Jaffa, and French agronomists brought with them European farming methods. At the same time, members of a group of religious Protestants in Southern Germany, the Templers, set up villages in several parts of Palestine and became a model for the new Jewish farmers.
During the British mandate over Palestine (1920-1948), growers could bring samples of diseased plants to the regional Office of Agriculture, where plant protection inspectors identified the problem and advised the growers what to do. Agricultural “officers” visited Arab villages in the evening, and showed agricultural slides, but extension as such did not have a high priority. In the Jewish settlements, members, who had more agricultural knowledge than others, went from settlement to settlement, and lectured therein the evenings. Courses were held by growers’ associations. These also published books and periodicals. Scientists in the research station of the Jewish Agency (the main development organization) saw it as their duty to hold meetings with the growers in their villages. Thus, a close relationship was forged between researchers, advisers and growers.

DURING THE FIRST DECADE OF STATEHOOD

After the establishment of the State of Israel, in 1948, a Professional Center was set up in the new Ministry of Agriculture. Its main task was to collect and transmit agricultural knowledge, in cooperation with the research stations. The former volunteer advisers became governmental employees and served growers in the established settlements.

The different village forms in Israel, which exist side by side, made it necessary to adapt extension activities to their respective farming systems. Most agricultural land in Israel, with the exception of Arab villages and some older Jewish village, is not privately owned. It belongs to the nation and is leased to growers at a very low rent for a period of 49 years, with automatic renewal of the lease, as long as the land is under cultivation. The main forms of Jewish agricultural settlement are the Kibbutz, often referred to as collective settlement, and the Moshav, also known as cooperative village. These two forms differ mainly in the amount of cooperation within the village. These two forms differ mainly in the amount of cooperation within the village, and this has changed dramatically during the last 30 years.

In the Kibbutz, production means are owned collectively and the land is cultivated as one large farm. Different agricultural branches are managed by Branch Coordinators, who usually have a good professional background and considerable experience. Members of the Kibbutz, who have specialized in a given branch, take turns as coordinators. Thus, the extension adviser can work opposite a knowledgeable client, who typically would attend upgrading courses and often handle field experiments.
The situation is different in the Moshav, where every family manages its farm unit. The need to compete on the export market forced also Moshav growers to specialize. Unless an urgent visit is needed, e.g. when an unusual plant pest is discovered, Shaham workers used to inform the Moshav secretariat, at which date they will visit the village, so that interested growers can attend. They usually met the adviser on one of the farms, whereupon the adviser might visit several farm units for specific purposes. This system has changed with the growth of commercialization. Now, advisers visit Moshav growers, when invited according to new rules.

Land in Arab villages is privately owned. The technological progress and the rise of productivity in the Arab villages were probably the highest achievement of the Israeli extension system. This traditional agricultural sector was developed mainly through extension activities, without breaking the traditional, socio-cultural patterns. The main strategies were: (1) to employ Arab graduates of agricultural schools, who belonged to “good families” (Hamullahs) and were more “acceptable” than others by the traditional farmers. (2) These youngsters had excelled already in their agricultural school (also) in the practical aspects of farm work, unlike the traditional agronomists, who did not like to dirty their hands. (3) These new advisers emphasized modern ways of plant protection, which gave quick results, and suggested new crops, which the old farmer did not know. (4) They set up small trial plots, which neighbours could see. (5) They fostered the self-assurance of the Arab growers (Blum, 1988a,b). Today, these strategies are no longer needed, and one of the early Arab advisers has become the Deputy Director of today’s national extension service – Shaham.

During the first three and a half years after independence, 700,000 new immigrants, mainly survivors of the holocaust and other refugees, arrived in the new country. The bulk of new immigrants could be absorbed only on previously uncultivated land, in the periphery. Some 250 new Moshav villages were established, all based on agriculture, but the new immigrants had no farming background. Therefore, a new approach to extension was needed. Volunteers with practical experience were recruited. Usually, a couple from an established Moshav came to live with the new immigrants in their new village. The husband worked as agricultural “guide” (a term that is still used for extension advisers), his wife did the same in home economics. Most of these guides had only 10-11 years of formal education. They too had to learn, while on the job, about new crops and practices, which were adapted to the conditions of the new development areas. Since that time, in-service training of at least one day a week has become a typical feature of the Israeli extension service. Within less than four years after independence, the population had doubled, and thanks to these new immigrant growers and their
volunteer advisers, the food situation in the country changed from scarcity of agricultural produce to surpluses. By 1960, most “new” growers had bridged the agricultural knowledge gap and the two separate extension systems could be merged into a **Joint Extension Administration**. A few years later, the Extension Administration and the Professional Service of the Ministry of Agriculture were fused into the **Extension and Professional Service (acronymic : Shaham)**

SHAHAM
When the home market became saturated, in the 1960’s, surpluses were sent abroad. The first attempts to export quickly taught the lesson that for export – the quality of the produce had to be improved. Farmers had to change from mixed farming to specialized branches, and accordingly, advisers too had to **upgrade** their own knowledge. Shaham started to release advisers (without loss of salary) to study towards a B.Sc. degree in Agriculture. This was mainly done a part-time basis, so that the advisers did not have to severe their links with their clients. After some years, it became clear that an even more specialized level of knowledge was needed. Most advisers worked for a Master degree. Their research thesis has brought them nearer to research. Planning, directing and summing up field experiments became over time a considerable part of the adviser’s work. The development of new technologies became often more central to their work than spreading knowledge. Some growers have complained that their advisers have become too absorbed in their research contacts and have less time to come out to their farms. This problem worsened, when the mileage allowance of advisers were curtailed.

Shaham has some peculiar features, which have to be seen against the social and agricultural backgrounds of Israel. Nowadays, growers are highly specialized, and so are all advisers. Due to advisers high specialization, a grower is sometimes advised by more than one adviser.

When a subject area becomes diversified, special subgroups are formed, which devote their attention to their area of specialization, under the guidance of a **Chief Professional Adviser (CPA)**. Thus, in the plant protection or production economics departments, there would be CPAs for vegetables, fruits, flowers and so on, and in the vegetable department – CPAs for tomatoes and other important crops. Depending on the relative importance of each branch and of the need to specialize to this level, such interdisciplinary specialists have a national or a regional responsibility.
Shaham is not the only extension provider. Advice on the purchase and use of irrigation equipment is offered by the supply companies. The major information source on animal husbandry is provided by the herdbook, veterinarians and feed mixture firms. Farmers who grow for the canning industry are actually obliged to follow the instructions of the industry’s advisers. Cinnobar (1993) estimated that 130 commercial firms and 40 regional and national agricultural organizations offer advice. More that 75% of this additional extension was provided for free. Only 25 private advisers were active. Growers clearly preferred the governmental extension advisers over others. Unlike most national extension services, Shaham does not provide farm management advice. The latter used to be the concern of the separate farming and settlement organizations (Moshav and Kibbutz).

**WHAT MOTIVATES ADVISERS?**

Although the salary levels of advisers in the government service is not high, compared to what the same graduates could earn in the private sector, relatively few extension workers left Shaham, once they had attained tenure. While the position of tenured civil servant, looking forward to receive one day a government pension, might be attractive to some, the chances of moving into a higher salary level, while working in Shaham, are small and not quite motivating. In practice, there are only two statutory positions, to which advisers could aspire: to become head of department or regional director. Both positions become available only when the incumbents retire, and that might take a long time. Furthermore, only one team member could get the appointment. Until the manpower of Shaham and the mobility of the advisers were curtailed, and its fate became uncertain, due to a change in government policy, the morale of advisers was very high. They did not count their working hours by the stopper.

A number of factors contributed to this high motivation. Extension advisers always saw themselves as professionals and pioneers. They were highly esteemed by the farming community. **Social approval** became an important incentive. It worked especially well in a relatively small system, in which everyone knew everyone else. The other aspects of professionalism are the **opportunity for constant upgrading of knowledge**, formally or informally, and the freedom and encouragement to **develop new initiatives**. Such advisers, who could earn more in the private sector, prefer the freedom to initiate new ventures over the need to “create more income” to their company. The extension service helps outstanding advisers to find funds for professional visits abroad.
At the end of a season, researchers, advisers and interested growers meet at a national end of season gathering to discuss the experiences gained during the season with a specific crop or branch. However, many growers do not wait for the end of season gatherings and approach researchers also during the season. Cinnobar (1993) found that 76% of growers had contacts with agricultural research. Findings of the study carried out by Oluwakemi et al (2014) indicate that promotional and training opportunities and good working environment enhance employees job retention. Delays in promotion and no appreciation for hard work negatively affect employees job satisfaction which motivates them to look for another employer.

CHANGES IN THE USE OF INSTRUCTIONAL TECHNOLOGIES

The early tradition of spreading agricultural knowledge through talks and publications continued also after independence, but it had to be adapted to the needs and intellectual skills of the new immigrants. Talks were accompanied by visuals and later by audio-visuals. Agricultural news was broadcast on the radio, for 10 minutes, both in Hebrew and Arabic, early in the morning, but this time slot was not popular with growers. After television came up, a much popular, weekly half-hour program was emitted, in the late afternoon, again in Hebrew and Arabic. However, when the percentage of growers in the total population diminished, the agricultural television programs were discontinued, in spite of their popularity with growers.

With technological advancements in the area of instructional media, and especially filming, a big step forwards was possible, especially after video cassettes became available. Quite a number of advisers teamed up with Shaham’s professional film maker to produce some 200 videos. Several productions were rewarded with prizes at international agro-film festivals.

With the development of the microcomputer, new potentials for extension were foreseen (Ausher et al., 1993), but nowadays, growers – both in Israel and abroad – seem to use computers mainly for communication purposes, e.g e-mail, and less to retrieve new agricultural information (Gelb & Offer, 2005).

Among all the technological developments, none had apparently a greater effect on the contact between grower and his adviser than the telephone. It is quite accepted that growers call their adviser even at home, in the evening. Sixty-three percent of farmers actually used this phone contact (Blum & Azencot, 1999). Nowadays, when all growers and advisers have their cellular phone, this has become the mostly commonly used means of communication between the two. Smart phones increased real time interaction
between advisors and farmers. **Chat groups** were formed and pictures from the fields enabled advisors to transmit on the spot group recommendations. Lawal – Adebowale (2015) observed that Mobile phones are used by 93 per cent of extension personnel in Nigeria for dissemination of information to farmers and other stakeholders of agricultural development. In addition, use of internet, laptops, CD-Roms, Portable VCD/DVD, MP-Players, and Multi-media Projectors are frequently used by 70 per cent of extension personnel. Donna Deegan et al (2014) ascertained that the use of Tablet PC’s has been a successful uptake technology in facilitating and delivering agricultural education in Ireland. The most striking modules where Tablet PC’s are found great in use are leadership training, applied cattle breeding, agricultural mechanics, grass management, chemical fertilizers, beef and sheep farm management, and farm business.

**Growers’ clubs** exist mainly in the more intensive, horticultural branches. Some clubs were initiated by the regional adviser, who invites also experts as guest speakers on specific topics. Grower’s clubs meet either in the afternoon (mainly in the less densely populated desert areas) or in the evening (when little travel is involved).

**CHANGES IN EXTENSION TRAINING AND RESEARCH**

During the 1960’s and 1970’s Shaham’s **Extension Division** was very active, training new advisers, organizing in-service workshops, developing (together with growers’ organizations) packages of publications, which were regularly updated, and experimenting with new extension methodologies.

In the 1960’s, Shaham approached the **Faculty of Agriculture** of the Hebrew University to set up a **graduate extension department**, which should train students to become advisers in the extension service. The first attempt failed after a short while, but a second try, towards the end of the 1970’s was more successful. The university provided the lecturers and researchers, and its students, who took postgraduate courses in agricultural extension, could accompany Shaham advisors on their tour of duties. Students appreciated the opportunity to observe in practice what extension was all about. During that time most research on agricultural extension in Israel was conducted at the Extension Unit of the Hebrew University. When fewer students enrolled in production agriculture, and the university had to cut down its academic manpower, the positions in agricultural education and extension were no longer filled, after the incumbents had retired.

Lately, Shaham resumed the apprenticeship scheme, in which mainly postgraduate students accompany extension advisors, when these visited their clients. Thus, Shaham hopes to recruit the most promising of these young agronomists.
Shaham also trains farmers’ sons, who do not attend an academic institution such as the University of Jerusalem’s Faculty of Agriculture. Although the one year course is non-academic, it follows a pattern, which is similar to that of the Faculty of Agriculture: The first trimester is dedicated to basics, the second to different crops, and the third to farm management and marketing.

In a new scheme, Shaham advisers can get a higher salary, without having to wait until a higher position becomes vacant (which might never happen). They can get an upgrade based on their contribution to regional research and development. To apply for this upgrade, candidates have to present to a committee of experts at least three reports on applied field research, which they have conducted, or demonstrate other significant contributions to agriculture and extension.

FROM FREE EXTENSION TO CO-FINANCING, COMMERCIALIZATION

It is only natural that with growing efficiency in agriculture, fewer growers are needed to grow more. That happened also in Israel. In 1948, one grower produced food for 17 persons, now- for over 100. Agricultural output grew by a factor of 16, and 30% of the produce is exported. However, with growing input costs and lower market prices, many growers can no longer make ends meet. Especially labor cost increased dramatically in the last 20 years, from 33% of growers’ income to 67%. During the same period, the number of independent growers diminished by nearly two thirds! Parallel to this development, also the size of the extension service shrank, though not at the same rate. In spite of the smaller ratio between growers and advisers, the latter could visit farmers less often during regular working hours, because each adviser had now to serve a larger area and travel allowances were severely cut. Mainly positions in the regions became vacant, changing the ratio between advisers in the regions and those in the center from 3:1, at the peak of Shaham’s expansion, to 2:1 today. This again, made visits to farms more difficult. The frustration over their inability to serve farmers as well as in the past, and the rumors about impending privatization affected adviser’s morale.

Like in many other countries, also Shaham started to differentiate between topics of general interest, which deserve free advice, and services, from which only one farmer profits, e.g. soil analysis. In Israel, Shaham’s Irrigation and Soils Field Service was financed from its inception, some 50 years ago, jointly by the government and the Regional Councils. The latter levy taxes from growers.
When mileage allowances for advisers were cut, growers’ organizations decided to fill some of these gaps. The first to suggest paying for “additional extension” were the avocado growers in one district. This enabled Shaham to employ one more avocado adviser. The advisers also got an additional mileage allowance and extra remuneration for their more intensive work (Elkana, 2001).

In the next step, Shaham advisers were allowed to work for extra pay after working hours or on weekends. This work should be outside their routine job. Growers were ready to pay advisers to supervise their fields, especially as “inspector” of farmers’ integrated pest management. Growers paid either directly to Shaham, or through a growers’ association, and Shaham adds this money to advisers’ salary.

Such “additional extension packages” were introduced into most agricultural branches. This quasi privatized extension, sanctioned by the State, went to the extreme in the citrus branch. Growers signed up on a yearly basis, taking into account their crop area and the requested visits. Growers, who did not sign up, receive annually only two farm visits. The head of Shaham’s Citrus Department pooled the fees collected and dispenses them to the agents, taking into account the distances the advisers have to travel. In other Shaham departments, advisers received the fee paid by the growers according to their reported overtime (which is supposed to be checked by the involved growers’ organization).

According to an arrangement between the Flower Board and the Floriculture Department of Shaham, the Board paid Shaham for each on-farm visits by an advisor about twenty US$ per hour. The flower board covers 75% of this sum from the marketing levy. The grower pays the other quarter. Yearly contracts were signed, allowing up to 24 farm visits. Additional visits could be purchased from Shaham advisors “unsubsidized” but still at a much lower rate than private advisers would have to charge in order to survive. Summarizing, Wolfson (2000) reported “a tremendous increase of agent to grower commitment”, but also that only 54% of flower growers subscribed to the new scheme – in spite of the heavy subsidy. Before the introduction of these new arrangements, 71% of flower growers have received on-farm visits from extension advisers.

In many countries, governments subsidize extension supplied by privates and commercial companies. Here we have an opposite case: Growers and their organizations subsidized the Ministry of Agriculture and its staff.
However, this extra financing of advisors by certain sectors had a negative impact on the know-how flow within the organization and was unfair to farmers who were left out of the sectorial arrangements. After some years, the rule of equal access to know-how by all farmers and sectors, and the equal salary for all advisers was reinstated.

Experience shows that once extension is commercialized, governments tend to curtail subsidies – especially when the farming lobby is weak. With knowledge being a major production factor, this development might affect agriculture negatively and more growers will have to stop farming. Dutch researchers found that with privatization, knowledge is no longer flowing freely. Those who have to buy knowledge, or develop it themselves will not want to give it on for free. (Proust and Duijsing, 2002)

**IS PRIVATIZATION THE NEXT STEP?**

This quasi privatization of extension also introduced inequality among advisers. Some of the flower advisers earned not so much, and a few saw their income even going down (Wolfson, 2005). This must lead to tensions within a department, in which advisers used to work on one team.

In 1994, the Israeli government decided to transform Shaham into a parastatal, commercial company. At that time, the resistance of the advisers and the parliamentary farm lobby was still strong, and the plan fell through. In 2005, the cabinet decided to privatize extension successively, and to leave in the Ministry of Agriculture only a small nucleus of some 50 advisers whose task would be:

- to collect and transmit profession knowledge to privatized extension providers.
- To advise on public good and topics of national importance like saving water, environmental quality – but through external providers.
- To engage in applied research, in cooperation with governmental and other research institutes,
- To monitor and supervise the agricultural extension provided to growers, and to supervise the apparatus that manages the transfer of governmental subsidies to the external extension providers,
- To give professional advice to different units in the Ministry of Agriculture, to research bodies and other professional units.

For some years the Ministry of Finance and Shaham were rope-pulling. The Ministry wanted to privatize, Shaham defended its viability. However, the commercialized model had its drawbacks. Some of the leading Shaham advisors felt that their working conditions had deteriorated and decided to quit and take the offer of improved
retirement conditions. When they left, the Ministry of Finance did not allow Shaham to replace them. Also other advisors used the offer of early retirement, and their positions too were frozen. Thus, the number of advisors shrank to 150 (down from 600 at its peak), but also the number of farmers fell from 75,000 to 15,000. In 2009, Shaham was reoriented and adapted to changed demands. New units were created to deal with plant engineering, agroecology (serving also botanical gardens), agricultural wastage and rural-urban interactions.

Fifty head advisers work from headquarters. The other 100 advisors work from five (once nine) regional centers, but with a closer connection of headquarters. The emphasis is now on group meetings. Since the reduced number of Shaham advisers in the different regions could not meet the demand for agricultural advice, “Privatized” extension specialists are contracted. These are mainly former Shaham staff. Each farmer can receive annually two free visits by a Shaham adviser or a private adviser. If that is not enough, farmers can ask a private adviser to come to the farm (especially to check on plant diseases).

Leila Masoudnia et al (2013) have reported that the quality of performance of private sector in providing extension services in Iran is relatively quite high and the Managers of agricultural production cooperatives, private consultants, and whole salers have a positive attitude towards more involvement of private sector in such services.

In summary: Agricultural technology in Israel and in other industrialized countries has changes tremendously during the last 70 years, but the demand for extension advice remained. An extension system like Shaham and its precursors could overcome technical and social changes, because it found ways how to adapt to new situations. In Francophone Africa, MAFF (management Advice for Family Farms) mechanism carried out by Producers Organization plays a central role in implementing, orienting and assessing advisory services, as reported by Guy Faure et al (2013). In this adaptation, farmer-extension workers appear as key factor in maintaining POs as advisory service providers.

REFERENCES


