



HORTICULTURAL EDUCATION AND EXTENSION IN TURKEY

Exploring the possibilities for collaboration between Turkish and Dutch knowledge institutions

Dieuwke Klaver
Ben Kamphuis

Wageningen, December 2006

HORTICULTURAL EDUCATION AND EXTENSION IN TURKEY

Exploring the possibilities for collaboration between Turkish and Dutch knowledge institutions

Dieuwke Klaver
Ben Kamphuis

Wageningen, December 2006

This project is financed by the Dutch Ministry of Agriculture, Nature and Food Quality.
Project no. BO-10-006-03

Wageningen International

Address: Lawickse Allee 11, 6701 AN Wageningen, The Netherlands
P.O. Box 88, 6700 AB Wageningen, The Netherlands
Tel: +31 317 495 495
Fax: +31 317 495 395
E-mail: info.wi@wur.nl
Internet: <http://www.wi.wur.nl/UK>

Agricultural Economics Research Institute

Address: Burgemeester Patijnlaan 19, 2585 BE Den Haag, The Netherlands
P.O.Box 29703, 2502 LS Den Haag, The Netherlands
Tel: 31 70 3358330
Fax: 31 70 3615624
E-mail: informatie.lei@wur.nl
Internet: <http://www.lei.wur.nl/UK/>

CONTENTS

Preface -----	7
Summary -----	9
1 Project goals and approach-----	13
2 Turkish agriculture at a glance -----	15
2.1 Some key figures of Turkey and the European Union -----	15
2.2 Developments in the Turkish agricultural sector-----	15
2.2.1 Agricultural land use -----	17
2.2.2 Agricultural production -----	17
2.2.3 Farm size-----	18
2.3 Horticulture in Antalya Province-----	18
2.3.1 Farm size-----	18
2.3.2 Marketing -----	19
2.4 Concluding remarks -----	20
3 Farmers' information needs -----	22
3.1 Categories of farmers -----	22
3.2 Information needs -----	22
3.3 Concluding remarks -----	23
4 The agricultural advisory system-----	24
4.1 Advisory and extension policies-----	24
4.1.1 The old extension and advisory system -----	24
4.1.2 New policies and trends-----	26
4.2 Organisation and performance of the advisory system in Antalya -----	27
4.2.1 Public extension services-----	28
4.2.2 Producer organisations -----	29
4.2.3 Private independent advisory services -----	30
4.2.4 Private dependent advisory services,-----	31
4.2.5 Universities and research institutes.-----	31
4.3 Concluding remarks -----	32
5 The agricultural education system-----	35
5.1 The education level in the agricultural sector in Antalya-----	35
5.2 Description of the agricultural education system in Turkey-----	36
5.3 Concluding remarks -----	38
6 Conclusions and strategies for collaboration -----	40
6.1 Matching information needs and supply in horticulture in Antalya-----	40
6.2 Trends and opportunities for collaboration-----	40
6.3 Strategies for collaboration-----	42
6.3.1 Setting up a training and resource centre for farmers and/or for advisors-----	42
6.3.2 Collaboration of Dutch and Turkish agricultural high schools and universities.-----	44
6.3.3 Concerted actions of stakeholders in the horticultural supply chain in Antalya-----	45
Abbreviations-----	46
References-----	47
Annex 1 List of interviewed persons-----	48

PREFACE

Accession to the EU will require Turkey to modernise its agricultural sector. According to a recent report, important factors in the modernisation of the agricultural sector are agricultural education and extension. In the framework of bilateral cooperation between Turkey and the Netherlands, the Dutch Ministry of Agriculture, Nature and Food quality was interested to know into what extent Dutch knowledge institutions could contribute to the development of professional agricultural education and extension in Turkey. For that purpose Wageningen University and Research Centre has carried out a rapid diagnostic appraisal, to explore the possibilities for co-operation in this field between Dutch and Turkish institutions. The research has been carried out by Dieuwke Klaver of Wageningen International and Ben Kamphuis of the Agricultural Economics Research Institute (LEI). The authors would like to thank Ms Carla J.M. Konsten, Agricultural counsellor at the Netherlands Embassy in Turkey for her guidance and support to the project, in particular with respect to the organization of the interviews in Ankara and Antalya. They would also thank the interviewed persons in Turkey for taking time for the interviews and discussing so freely on the issues brought forward by them. Without their cooperation the study should not have been possible. A special thanks goes to Prof. Dr. Burhan Ozkan of the Department of Agricultural Economics of the Agricultural Faculty of Akdeniz University in Antalya, who organized a major part of the meetings in Antalya.

The authors

SUMMARY

Project background and approach

In view of the developments in the global economy and the intended accession to the European Union, Turkish agriculture needs to modernize in order to become competitive and to meet the consumer demand for safe and high quality food. Agricultural education and extension play an important role in this process, but there are indications that the current agricultural knowledge system in Turkey is not suited for this challenging task. In the context of its bilateral cooperation programs the Dutch Ministry of Agriculture, Nature and Food Quality asked Wageningen University and Research Centre to explore the possibilities for co-operation between Dutch and Turkish institutions.

The objectives of this rapid diagnostic appraisal can be summarized as follows:

- To assess the quality of the extension and education system in Turkey in view of the requirements of the developments in the horticultural sector;
- To explore the possibilities for collaboration between the Dutch and Turkish agricultural education and training sector.

Besides desk research, most information was collected by means of semi-structured interviews and workshops with representatives of companies and organizations in the horticultural supply chain in Turkey, as well as with actors in the advisory and education system. The survey was focussed on horticulture in Antalya province.

Turkish agriculture at a glance

Turkey is a large country compared to most of the EU member states. With a total area of about 78 million ha Turkey is about as large as the ten new EU member states together. The area of agricultural land amounts to more than 20% of the total agricultural area of EU-25. The diverse climatologic and topographical conditions make it possible for Turkish agriculture to produce a wide range of livestock and crops. Turkey is a major agricultural producer by world standards; it is one of the largest producers of many pulses, nuts, fruits and vegetables and the largest producer of apricots, hazelnuts and figs. Turkey's production of tomatoes is half of the EU-25 total. Tomatoes are the most important vegetable product in Turkey, grown all over the country, but centred in the Marmara and Aegean regions for climatically reasons. Recently the production in green houses in southern Turkey is increasing to provide for fresh vegetables in winter season at the domestic and foreign markets as well.

Farms in Turkey are generally family-owned, small and fragmented. The 2001 agricultural census recorded 3 million farms with an average cultivated area per holding of about 6 ha, which is about one third the average size (19 ha) in the EU in 2000. As it is in Turkey, the majority of the farms in Antalya are small. There are about 50.000 farms in Antalya, most of them small mixed farms with an average of 2-3 ha of land, many of them subsistence and semi-subsistence households. About half of the agricultural holdings in Antalya have greenhouses or plastic tunnels, on average between 0.25 and 0.35 ha. Apart from this large number of (very) small farmers, there are a few large farms with more than one hectare protected area, including about ten large export oriented companies with in total about 100 ha of modern greenhouses. The grand majority of vegetables grown in Turkey are meant for the domestic market, only 4 % is exported. In the winter period the share of Antalya in the exports accounts to about 75% of the total Turkish export of fresh products, which is in particular due to the greenhouse production in this area.

A large part of the vegetables grown in Antalya is sold via commissioners on the local wholesale markets. This is compulsory by law, in particular because of tax collecting reasons. However, small farmers are allowed to sell their produce at the street vegetable markets. It is estimated that more than half of the vegetable production is directly sold via these markets. Only a small part is sold through retail shops and supermarkets. Generally speaking, quality does not play an important role in the domestic market, yet. The major incentive for improving the quality of vegetables originates from the export market.

Trends in horticulture

It is expected that the growth in vegetable production in Antalya will continue in the coming years, but the market will change. While currently a larger part of the production is sold unsorted on the domestic market, it is expected that demand for high quality vegetables will increase as it is already the case for the export market. The high quality domestic and export markets are mainly served by large-scale farms and

companies. In order to survive the small-scale farmers need to compete with these farms, meaning that they have to enlarge their farms and to modernize the production facilities. Only a small number of farmers can afford these investments, in particular when considering the current constraints in the provision of credits to farmers. It is therefore questionable whether the small farmers can survive the competition. Taking into account that more than half of the current greenhouses are smaller than 0.3 ha and at least 1.0 ha seems to be necessary in the near future, a drastic decrease in the number of farmers may be expected.

Not only in the production but also in the marketing of vegetables drastic changes are expected. At the domestic market and increasing role of the supermarkets is foreseen at the cost of the green markets. New standards for packaging and tracking and tracing regulations for quality control will affect the whole vegetable supply chain. The increasing role of supermarkets and exporters in the supply chain will also influence the central position in the distribution system of wholesale markets and the commissioners on these markets.

Information needs of farmers

The afore mentioned changes in the horticultural sector means that the farmers need to change their farming practice and adjust to increasing domestic and international competition. Adequate information, on various aspects of farming, such as production techniques, new technologies, farm economics and financing, as well as on policy measures, subsidies, rules and regulations with respect to markets, food safety and environment, is necessary for the farmers to take the right decisions. Most small farmers, however, are living and farming according to traditions and customs and have insufficient knowledge on almost all aspects of modern farming. The medium size growers, with about half a hectare of horticulture, have basic knowledge on horticulture and are aware of the fast changing situation in the sector. Their focus is on expanding their production and to meet the quality requirements of the market. These market oriented farmers need information to keep posted on the developments in horticulture and individual advice on farm development and investments. The large scale farmers do have access to information sources on modern horticultural production technologies and marketing, both in Turkey as from abroad.

Agricultural advisory services

A survey under 400 farmers in Antalya shows that the most important information source for two thirds of them are farming neighbours. The second most important information source is the commissioner at the wholesale market and the third one the retail supply shops in the village. The public and private agricultural advisory services play a very limited role in the information supply to farmers. The Public Extension Agency – TEDGEM – of the Ministry of Agriculture and Rural Affairs (MARA) is in charge of providing advice to farmers on all aspects of farming through the 81 Provincial Directorate of Agriculture and 950 County Directorates of Agriculture. They do, however, only reach a limited number of farmers and provide scarcely individual advice. An interesting initiative to improve the system is the so-called Koymer project that is aimed at stationing agricultural advisors in villages. These advisors, mainly young agricultural engineers, are for a larger part paid by the Agricultural Chamber or other NGOs. The major challenge of this project is to mobilise private funding for further expansion. Currently 1,000 villages are being served, the target number for 2007 is 2,500 villages, while there are 35,000 villages in Turkey.

Next to the public advisory service, the farmers can obtain advice from

- Producer organisations they are associated with, such as Agricultural Credit Cooperatives, Sales Cooperatives, Development Cooperatives and Agricultural Chambers;
- Private independent advisors;
- Private dependent advisors, working for actors directly involved in the supply chain, such as seed companies, suppliers of fertilizers and agro-chemicals, retail shops, and commissioners.
- Research institutes and universities.

The performance of the advisory services, the outreach in terms of numbers and types of growers reached and some trends in development are briefly summarized in the following table.

Org.	Performance	Outreach	Trends
Public extension services	<ul style="list-style-type: none"> - Rather inflexible hierarchical organization - Not farmer oriented but policy oriented - Lack of qualified extension workers - Insufficient operational budget - Extension workers lack the trust of farmers 	Officially: all farmers, but in practice: <ul style="list-style-type: none"> - Medium and large-scale farmers - Farmers with better education levels. - Using mass media rather than face-to-face approaches 	Public extension service will probably get a new role in <ul style="list-style-type: none"> - Providing extension services for rural development rather than commercial farming - Propagating agricultural and rural policies and regulations
Producer organisations	<ul style="list-style-type: none"> - Do have specific knowledge according to the purpose of the organisation - Credit cooperatives are known to be a trusted information channel - No information available on the number and quality of advisors 	<ul style="list-style-type: none"> - All members of the respective association, i.e. large numbers of farmers - Members who have specific information requests - Face-to-face communication - Leaflets and brochures 	<ul style="list-style-type: none"> - Potential to reach smaller growers by agricultural credit cooperatives and producer unions.
Independent advisors	<ul style="list-style-type: none"> - In general, young advisors who provide up-to-date, qualified advice that is tailored to the clients - Trusted by clients - Continuously updating knowledge, skills and attitudes 	<ul style="list-style-type: none"> - Growers who are willing and able to pay for independent advice - Face-to-face communication, weekly visits, about 50-100 growers per advisor - In Antalya 30-40 companies reaching about 3,000 farmers (estimation) 	<ul style="list-style-type: none"> - Growing demand for professional advice from farmers focussing at export and top-domestic market - Not (yet) enough independent advisors to serve all commercial growers
Dependent advisors	<ul style="list-style-type: none"> - Performance is depending upon commercial interests and knowledge of the products they sell. 	<ul style="list-style-type: none"> - All growers can get information - Face-to-face communication - Demonstration fields - Brochures and leaflets 	<ul style="list-style-type: none"> - Growing role of input suppliers and commissioners in advisory activities
Universities Research inst.	<ul style="list-style-type: none"> - High level knowledge on specific topics - Supply driven 	<ul style="list-style-type: none"> - In particular providing information to (independent) advisors - Workshops and seminars 	<ul style="list-style-type: none"> - Interested in training of advisors

The overall conclusion of the interviewed people in this survey is that the current agricultural advisory system in Antalya does not meet the requirements of modern agriculture. The public advisory service of MARA does not reach the farmers and the others organisations provide mainly specific information related to the commercial or statutory tasks of that organisation, except for the private independent advisors, who give professional advice to individual farmers. The last group, however, is too small and not (yet) structured to reach all interested farmers. This situation may change on short notice, because in 2007 a new law on a pluralistic advisory system will become operational. According to that law, farmers can get reimbursed 80 % of the costs of private independent advisors. A certification and registration system will be put in place to ensure the quality of advisors. Advisors need to follow a two-months compulsory training programme. It is expected that not only private independent advisors will play an increasing role in supporting the growers in Antalya in the process of modernization, but also the dependent advisors of supplying companies, exporters and commissioners.

Agricultural education

Many respondents have highlighted constraints to innovation and modernization of the horticulture sector that are related to the education system. About 90% of the agricultural population in Turkey has less than high school level education, many of them only primary education and often they can hardly read and write. This means that the introduction of new technologies and innovations in the horticulture sector heavily relies upon face-to-face advisory methods and field demonstrations, which is a labour intensive and costly approach. This situation will probably improve because in 1997 the number of compulsory schooling years has been raised from five years to eight years.

There are only eighteen Agricultural Vocational High Schools in Turkey (none in Antalya Province), with about 2000 students, which is much too low to provide the required educational level for the future farmers. The situation may improve in the coming years, because the Ministry of Education has taken over the responsibility of thirteen agricultural vocational schools and intends to adjust the curricula of these schools to the requirements of the agricultural sector and to introduce agricultural courses on other regular vocational schools.

At higher education level, the centralised student examination and placing system hampers the development of high quality agricultural education, because most of the students at the agricultural faculties do not have a farm background or an interest in a job in the agricultural sector. In consequence, student motivation is low during the education programme, and most young agricultural engineers lack the specific competences needed for a professional advisor. It is, however, promising that the agricultural faculties recognise the importance of improving their programmes for preparing their students for a job in the private agricultural sector and for advisory services as well.

Possibilities for bilateral cooperation

Respondents identified various opportunities for collaboration between Turkish and Dutch knowledge institutions in the field of agricultural education and advice. All actors emphasised the importance of improving the quality of advisory services for the horticultural sector. Actions in this field should preferably be oriented to small and medium size growers who are commercial and market oriented and are willing to pay for professional advice individually or jointly via study clubs or producer unions. Actions to improve the Turkish advisory services in horticulture should focus on improvement of the services delivered by independent advisors, young agricultural graduates under contract of producer organisations or companies in the supply chain.

Most respondents from both public and private organizations were in favour of establishing training centres for agricultural advisors. The aim of the centres would be to provide professional training on all aspects of horticulture to advisors and trainers. The character and the institutional set-up of such a centre should be defined in consultation among the major stakeholders in the vegetable supply chain in Antalya. These training centres could also play a role in the compulsory training programme for advisors under the new agricultural advisory law. The Dutch knowledge institutes could contribute to the development of these centres through support in preparing the institutional setting, curricula development and training of trainers.

With respect to the agricultural education system, the survey made clear that it will be necessary to attune the curricula at agricultural vocational schools and agricultural faculties better on the requirements of the agricultural sector. Dutch expertise in the field of curriculum development and train-the-teacher courses were mentioned as possibilities for collaboration. Other options are establishing twinning relations between vocational schools, support to life-long education programmes and scholar and fellowships through EU programmes as Erasmus and Leonardo da Vinci.

One of the major conclusions of this survey is that cooperation and consultation among stakeholders in the vegetable supply chain in Antalya is rather limited, while this is needed to achieve the necessary modernisation of the horticultural supply chain in Antalya. For that reason it is proposed to organise a series of multi-stakeholder workshops and meetings on different aspects of the vegetable supply chain, to update the actors in the sector on relevant developments. These workshops should lead to joint action plans aimed at increased performance of the supply chain.

Dutch actors could play a role in the preparation and facilitation of such a process, bring in external resources for training or information required and organise horticultural events where both Dutch and Turkish actors meet to exchange information on modern technologies in the sector and to improve business relations.

1 PROJECT GOALS AND APPROACH

Project background

Turkey faces important changes in the agricultural sector. Accession to the EU will require Turkey to modernise its agricultural sector. According to a recent report ¹⁾, important factors in the modernisation of the agricultural sector are agricultural education and extension. In the framework of bilateral cooperation between Turkey and the Netherlands, the Dutch Ministry of Agriculture, Nature and Food Quality was interested to know into what extent Dutch knowledge institutions could contribute to the development of professional agricultural education and extension in Turkey. For that purpose Wageningen University and Research Centre has carried out a preparatory study, to explore the possibilities for co-operation.

Project objectives

The objectives of the abovementioned preparatory study have been formulated as follows:

General objective

- To contribute to the development of high quality and professional agricultural extension and education services in Turkey in order to support the modernisation of the agricultural sector of Turkey in view of its accession to the EU.

Specific objectives

- Assess the extension and education needs of horticultural producers, while comparing those needs with the information and education supply services in Turkey i.e. the agricultural extension and education system.
- To explore the potential for the delivery of high quality agricultural extension and education services in Turkey and the possibilities for collaboration between the Dutch and Turkish agricultural education and training sector.

The project was focussed on the horticultural sector and on those growers who mainly produce for the (export) market.

Research questions

- What is the actual state of the art in agricultural education and extension in Turkey?
 - Which are the levels of education in agriculture, how appropriate are they in view of the need for modernisation of agriculture?
 - How appropriate is curriculum and education/ training/ extension methods, what are the needs and priorities in view of improving current practices?
 - What is the quality of education/ extension staff, what are the needs of upgrading quality of education/ extension staff?
 - Which agricultural problems are addressed in view of modernisation?
 - Which are the main actors and stakeholders?
- Which are the opportunities and constraints of this sector in view of the challenges of modernising the agricultural sector to realise a compliance with EU rules and regulations and norms?
- What are the needs of agricultural producers in the area of agricultural extension and training related to:
 - Production methods and techniques
 - Food security, phyto-sanitary issues, animal health
 - Commercialisation marketing?
 - Sustainable use of natural resources?
- Which are the existing constraints in agricultural extension and agricultural education to which Dutch institutions can give a contribution in view of existing expertise (agricultural knowledge and techniques, process aspects in education, curriculum development etc.)

1) Burrell A.M. and A.J. Oskam, Turkey in the European Union. Implications for Agriculture, Food and Structural Policy, CABI Publication. 2005

- Which institutions are the most relevant or offer the best opportunities for realising effective co-operation in Turkey and in the Netherlands?
- Which aspects of the agricultural education and extension have priority?

Project approach

The research methodology consisted of three parts:

- Analysing the main characteristics of the horticulture supply chain and identifying information, advisory and education needs of farmers and other actors in the horticulture supply chain. This part of the study focussed on the demand side, i.e. the demand of growers for information, advisory and education, trying to distinguish different categories of growers.
- Describing the education and advisory systems, both public and private, and assessing the performance of these actors in responding to the information, advisory and education needs of growers. This part of the study focussed on the supply side of the information, advisory and education services.
- Identifying strategies and activities to improve information, advisory and education services in relation to growers' needs and to identify possibilities for collaboration. During the visit, Turkish organizations identified possibilities for collaboration, while after that, a workshop has been organised in the Netherlands to discuss with relevant Dutch organizations the possibilities collaboration.

The main data collection methodology used was based upon the principles of Rapid Diagnostic Appraisal (RDA). Data were collected by means of semi-structured interviews and workshops with almost every actor in the horticultural supply chain in Turkey, as well as with actors in the information, advisory and education system. The viability of the information obtained is ensured by triangulation of the information obtained by different actors. Other methods used for increasing the reliability of information are the debriefing meetings organised at university level in Antalya, as well as joint analysis of the information by the research team of WUR. Information was obtained both in Ankara and in Antalya province. Other data have been collected from literature plus reports and other written information provided by the actors interviewed.



Figure 1.1 Turkey

2 TURKISH AGRICULTURE AT A GLANCE

2.1 Some key figures of Turkey and the European Union

Turkey is a large country compared with most of the EU member states. With a total area of about 78 million ha Turkey is about as large as that of the ten new EU member states together. The area of agricultural land amounts to more than 20% of the total agricultural area of EU-25. Turkey has a population of 70.7 million, which is 15 % of the EU-25 population. Almost 11 % of the Turkish population works in the agricultural sector, compared with less than 2 % in the EU-15 and 5 % in the new member states.

Table 2.1 Some key figures for Turkey, EU-15 and the NMS

Indicator	Turkey	EU-15	NMS-10
Total area in 2002 (million ha)	77.9	323.7	73.9
Total utilized agricultural area in 2000 (million ha)	38.9	130.8	36.2
Total population in 2002 (million people)	70.7	379.7	74.3
Employment in agriculture in 2002 (million people)	7.5	6.5	3.9
Gross Domestic Product in 2003 (billion Euro)	212.3	9,300.8	437.0
GDP per capita in 2003 (Euro)	3,000	24,320	7,854
GDP per capita in 2003 (PPS)	5,930	23,270	6,340
Agricultural Gross Value Added in 2002 (billion Euro)	22.3	171.3	13.9
Agricultural GVA per employed person in 2002 (Euro)	2,991	26,206	3,581

Source: Burrell and Oskam, Eurostat

The economy of Turkey, however, shows another picture. The Gross Domestic Product (GDP) is about half of that of the NMS and only 2.2 % of that of EU-15. The GDP per capita in Euro in Turkey is 40% of that in the NMS and 12% of that in the EU-15. The comparison in Purchasing Power Standard (PPS) shows that the difference with the NMS is not so large, but compared with the EU-15 the Turkish people have only a 25 % of the purchasing power of the EU inhabitants. The differences are about the same for the agricultural sector. Income inequality is high between rural and urban areas and as a result there are large regional differences as it is shown in figure 2.1.

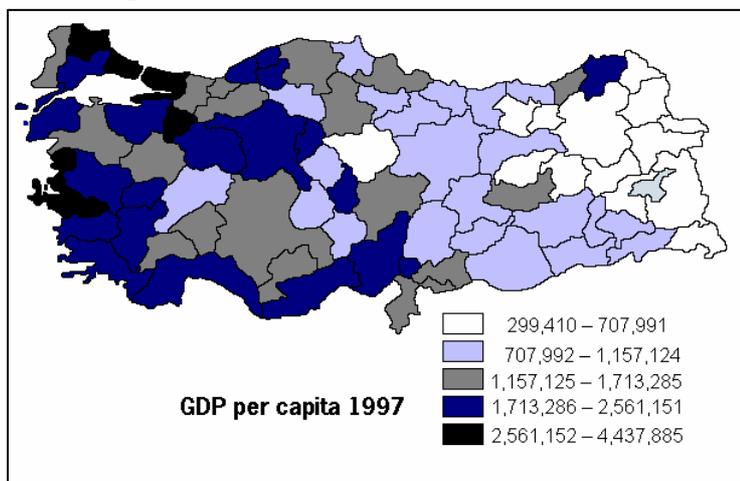


Figure 2.1. Regional differences in GDP per capita in Turkey in 1997
Source: Ferhan Gezici and Geoffrey J.D. Hewings, 2003

2.2 Developments in the Turkish agricultural sector

The diverse climatologic and topographical conditions in Turkey cause the production of a wide range of livestock and crops (Source: Dr. Alptekin Karagöz²⁾. The Mediterranean and Aegean regions are suited to fruit and vegetable production while the more extensive agriculture (arable field crops and livestock) occurs in the more mountainous areas (particularly in the east and south-east). The main characteristics of the agricultural zones are described in table 2.2.

²⁾ A major part of this chapter is taken from Burrell and Oskam, 2005



Figure 2.2. Agricultural zones of Turkey

Table 2.2. Characteristics of the agricultural zones of Turkey

Region	Average Temp. °C	Days with humidity	Days with snow	Principal Products
Marmara	14	70	10	Cereals, sunflower, olives, tomatoes, fruit and vegetables, poultry. Important cattle region.
Aegean	16	65	0	Rain fed cereals, olives, citrus, grapes, tomatoes, vegetables, figs, irrigated cotton, tobacco. Extensive small ruminant and beef cattle, intensive dairy cattle.
Black Sea	14	75	10	Rain fed hazelnuts, vegetables, maize, sugar beet, tea. Local cattle production and extensive sheep raising.
Central-North	11	60	22	Rain fed cereals, food and forage legumes. Extensive small ruminants, intensive dairy cattle.
Central-South	11	60	22	Rain fed cereals, food legumes, sugar beets, vegetables and forage production.
Mediterranean	18	62	0	Rain fed and irrigated cereals, olives, cotton, citrus, maize, fruit vegetables. Significant goat meat production, other livestock less important.
Central-East	12	55	30	Rain fed cereal, food legume production. Extensive small ruminant production, local and cross-bred cattle for milk
North-East	7	60	100	Mainly extensive livestock production and subsistence cereal production.
South-East	8	50	1-80	Rain fed cereals and food legumes, irrigated cotton, nuts, grapes, fruits. Extensive sheep and goats. Increasing use of irrigation

Source: Burrell and Oskam, p 63, *FAO Country pastures profile*, Karagöz, 2001

2.2.1 Agricultural land use

According to Burrell and Oskam (2005), trends in agricultural land use are difficult to capture since estimates vary significantly according to data source. A best estimate of agricultural land in 2001 (the latest census year) in Turkey would lie between 35 and 41 million hectares for total agricultural area and between 22 and 27 million hectares for cultivated area. Table 2.3 gives an overview, which shows that two third of the cultivated land is used for arable crops. The major part of it is for cereals, wheat, barley and corn.

Table 2.3 Arable and horticultural land use in Turkey in 2001

Land use	Area in 1000 hectares
Arable land	18,092
Fallow land	4,914
Fruit orchards	1,425
Vineyards	525
Olive groves	600
Vegetable gardens	799
Total	26,355

Source: Alptekin Karagöz, 2001, (SIS, 2002a)

2.2.2 Agricultural production

Turkey is a major agricultural producer by world standards; it is one of the largest producers of many pulses, nuts, fruits and vegetables and the largest producer of apricots, hazelnuts and figs. Turkey's output of cotton and nuts exceeds that of EU-25, whilst its production of textile fibres, tomatoes and onions is half or more of the EU-25 total (table 2.4).

Table 2.4: Comparison of Turkey's output quantities with EU-15 and EU-25

Product	Year	Turkey	% EU-15	% EU-25
Cereals	2002	30,667	14.3	11.5
Wheat	2002	19,500	18.7	15.6
Barley	2002	8,300	17.3	14.7
Textile fibres	2002	989	73.7	72.2
Cotton lint	2002	988	152.8	152.8
Raw tobacco	2001	145	43.8	39.6
Sugarbeet	2002	16,500	13.9	11.7
Oilseeds	2000	2,140	14.8	12.2
Potatoes	2002	5,200	11.2	7.8
Apples and pears	2001	2,540	22.9	n.a.
Stone fruit	2000	1,557	24.9	22.6
Citrus	2002	2,493	23.4	23.1
Olives	2001-02	1,200	11.0	11.0
Nuts	2002	843	114.4	111.5
Tomatoes	2001	8,425	56.4	54.1
Watermelons	2002	4,575	250.6	n.a.
Onions	2001	2,375	61.9	49.3

Source: Burrell and Oskam; SIS (2004a), European Commission (2004a), Eurostat (2004a).

Table 2.5 gives an overview of the share of various products in the total agricultural output of Turkey, compared with EU-15 and the NMS. It shows that fruit and vegetables contribute much more to the total value of agricultural production in Turkey than in the EU-15 or the NMS. Over the period 1980 till 2003 the production of vegetables has more than doubled (Burrell and Oskam, p. 68). This production increase has been mainly due to tomatoes, green peppers, cucumbers, carrots and green onions.

Tomatoes are the most important vegetable product in Turkey, grown all over the country, but the production is centred in the Marmara and Aegean regions for climatically reasons. Recently the production in green houses in southern Turkey is increasing to provide for fresh vegetables in winter season at the domestic and foreign markets as well.

2.2.3 Farm size

Farms in Turkey are generally family-owned, small and fragmented. The 2001 agricultural census recorded 3 million farms with an average cultivated area per holding of about 6 ha (table 2.6), which is about one third the average size (19 ha) in the EU in 1999/2000. About 65 per cent of agricultural holdings are smaller than 5 ha. The majority of these holdings are vegetable producers, which typically cultivate an area of less than 1 ha. Only 15% of the farms in 2001 were larger than 10 ha but they have more almost 70% of the total cultivated land in Turkey.

Subsistence and semi-subsistence farming is an important characteristic of Turkish agriculture, which is similar to the situation in some regions in the new member states of the EU-25 (e.g. Poland), as well as in Bulgaria and Romania.

This type of farm is characterised by very low productivity, high hidden unemployment and low competitiveness. These farms, however, are crucial for providing income security and livelihood to the majority of the rural population in Turkey. However part of the small farms in Turkey are not subsistence farms but small scale horticultural farms, where production for the market on relatively small plots can be profitable.

2.3 Horticulture in Antalya Province

2.3.1 Farm size

As it is in Turkey, the majority of the farms in Antalya are small. According to the information acquired during the interviews, there are about 50.000 farms in Antalya, most of them small mixed farms with an average of 2-3 ha of land. According to a chairman of a development cooperative about 50 % of the farms has field crops and orchards, mainly pomegranate. On an average about 1.5 ha is used for field crops such as wheat, barley, and corn for silage. About half of the farms have one or two cows; ten percent of the members of the cooperative (only) produce olives and forty percent has a greenhouse.

Table 2.5 Value of Agricultural Output in Turkey, 2002

	Turkey	EU-15	NMS
Total value (million Euro)	28,940	270,911	26,085
Of which generated by:			
Field Crops	35.0		
Cereals	17.2	13.0	18.3
Pulses	3.2		
Industrial Crops	7.9		
Oil Seeds	1.8	1.7	3.2
Tuber Crops	4.9		
Vegetables	18.4	8.4	6.7
Fruits	24.1	6.5	4.9
Livestock Products	22.6	45.0	
Milk	8.5	14.5	15.5
Meat	5.7		
Poultry Meat	3.6		
Eggs	3.3	2.0	3.9
Total value	100.0	100.0	100.0

Source: Burrell and Oskam; SIS (2004a), European Commission (2004a), own calculations

Table 2.6 Farm size in Turkey in 2001

Size of holdings (ha)	Percentage of holdings	Percentage of cultivated area
< 1.0 ha	17.0	1.3
1.0 – 1.9	17.5	3.8
2.0 – 4.9	30.9	15.5
5.0 – 9.9	18.2	20.4
> 10 ha	16.4	59.0
Total	100.0	100.0
Total	3,076	17,164

Sources: Burrell and Oskam

Cakmak, 2004, Table 2, based on SIS data

It is estimated that about half of the agricultural holdings in Antalya, i.e. 25,000 farm households have greenhouses or plastic tunnels, on average between 0.25 and 0.35 ha. According to the figures of the Chamber of Commerce of Antalya, even 57 % of the holdings have less than 0.1 ha under plastic or glass, 41% have between 0.1 and 0.3 ha and only a few farms have more than 0.3 ha.

The farms in Antalya are not only small but the land is also fragmented, due to the inheritance system that forms an incentive for a division of parcels among the heirs. According to a new law, parcels less than 0.5 ha are not allowed to be split up further, but it is said that in practice the fragmentation is still going on. As a result the average size of the tunnels and greenhouses is also very small. The small farms do not provide sufficient income for the households and therefore many farmers have off-farm employment, amongst others in the tourist sector.

Apart from this large number of (very) small farmers, there are in Antalya a few large farms with more than a hectare protected area. There are about ten large export oriented companies with in total about 90-100 ha of modern greenhouses. The Chamber of Commerce estimates that about 60% of the modern greenhouses of Turkey are located in Antalya. Almost half of the total protected area in (1,760 hectare) consists of plastic greenhouses (47%), 35 % is under glass while the rest is plastic tunnels (18%). Figure 2.3 shows that the area of greenhouses in Turkey is steadily increasing as it is in Antalya.

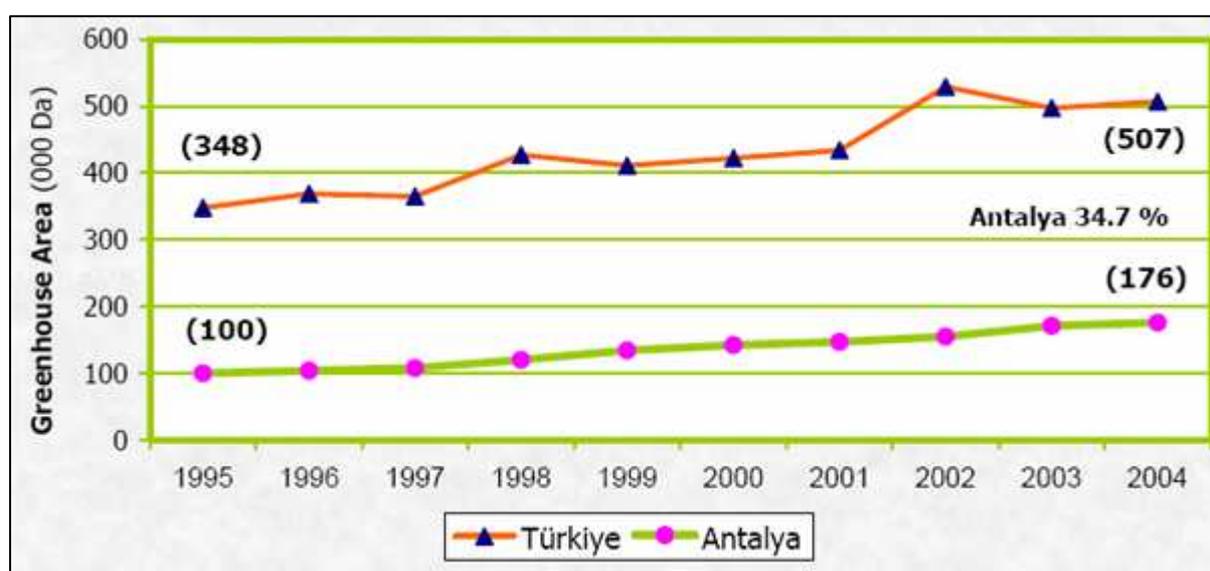


Figure 2.3 Development of greenhouse area in Turkey and Antalya
(Source:Antalya Chamber of Commerce and Industry)

2.3.2 Marketing

Position of Antalya in Turkey

The grand majority of vegetables grown in Turkey are meant for the domestic market. Of the about 43 million tons of fresh fruit and vegetables produced in Turkey only 4 % is exported with a total value of about 800 million USD. About 8 % of the production takes place in Antalya province. The share of Antalya in the export volume is 11.5 % and of the export value 18.4 %, which shows that Antalya is exporting relatively higher valuable produce.

Table 2.7 Share of Antalya in the production and export of fresh fruit and vegetables in 2004

Fresh fruit and vegetables	Turkey	Antalya	Percentage
Production (1000 tonnes)	43,000	3,621	8.4
Export volume(1000 tonnes)	1,623	186	11.5
Export value (million USD)	804	148	18.4

Source:Antalya Chamber of Commerce and Industry

The export value of fresh fruit and vegetables from Turkey consist for 37 % of citrus fruit; cherries and grapes count for 25% and tomatoes and peppers for 21%. About 60% of the exported peppers, 36% of the tomatoes and 19 % of the exported cherries is produced in Antalya.

The top five countries that import vegetables from Turkey are Germany (15%), Greece (12.5%), Russia (10.7%), the Netherlands (9.2%) and Romania (7.9%) (Source: Antalya Chamber of Commerce and Industry)

In particular in the winter period the share of Antalya in the exports is very large and accounts to about 75% of the total Turkish export of fresh products, which is in particular due to the greenhouse production in this area. About two thirds of the vegetables production in Antalya is grown in greenhouses. In 2004 about one third of the greenhouses of Turkey was located in Antalya.

The role of the wholesale markets

A large part of the vegetables grown in Antalya is sold via commissioners on the local wholesale markets. This is compulsory by law, in particular because of tax collecting reasons. The farmers have to pay in total 14.4% of the market value, which is 2 % tax for the municipality, 4.4 % tax for the government and 8 % commission for the commissioners. In case the produce is transported from a local wholesale market to another one, e.g. in one of the big cities as Istanbul or Ankara, the same taxes have to be paid. Only organic vegetables and vegetables for export or processing can be transported directly to the buyers. When farmers provide directly to supermarkets they have to pay 15% tax/commission. Consequently the commissioners have a powerful position in the vegetable supply chain in Turkey. However, small farms have also another outlet than the wholesale market, because they can sell their produce at the street/green markets, without tax with maximum of 500 kg per day. It is estimated that more than half of the vegetable production is directly sold via these markets because most of the consumers in Turkey buy the vegetables at these markets, of which there are thousands in Turkey. Only a small part is sold through retail shops and supermarkets. The supermarkets do not play the leading role in quality control as it is in most EU countries, through EurepGAP and additional rules. Only a few supermarkets have a strategy for selling high quality vegetables. Generally speaking, quality does not play an important role in the domestic market, yet. The major incentive for improving the quality of vegetables originates from the export market. There are few initiatives from government level for quality control. Hence the quality awareness at the farmers' level is rather low.

The powerful position of the commissioners in the fruit and vegetable supply chain is impacting upon the introduction of food safety and quality regulations as well as other regulations that are in line with the EU *acquis communautaire*. The commissioners, under the Ministry of Industries and Trade are not responsible for food safety and quality. This is a problem for exporters who are responsible for those issues. Therefore they sort and package themselves. The influence of the exporters union on the commissioners is very limited because of position of the Prime Ministry Under Secretariat for Foreign Trade vis-à-vis the Ministry of Industries and Trade. In order to improve the quality control, the exporters lobby to get agricultural export under the responsibility of Ministry of Agriculture and Rural Affairs, which currently controls the export facilities at the wholesale markets but does not have a say over the commissioners and their activities. The position of MARA vis-à-vis the Ministry of Industries and Trade is also not that strong.

2.4 Concluding remarks

Based on the available literature and the meetings with stakeholders in the horticultural sector in Antalya the major trends in horticulture, in particular vegetable production can be described as follows. Antalya is one of the regions in Turkey, where the production of vegetables has increased steadily in the last ten years. The growth was mainly due to an increasing market in Turkey itself, but also the export of vegetables increased over this period. Currently a larger part of the production is sold unsorted on the domestic market, but due to the expected growth in income and increasing consumers' concerns with respect to food safety and environment, an increasing demand for high quality vegetables is expected as it is already the case for the export market. It is difficult for small-scale farmers to meet these requirements and consequently the high quality domestic and export markets are mainly served by large-scale farms and companies. In order to survive the small-scale farmers need to compete with these farms, meaning that they have to increase their production both per farm and per hectare. Farm enlargement will be necessary as well as re-allotment of small plots into single larger units, in order to benefit of economics of scale.

In order to increase the yield per ha and the quality of the produce, the farmers need also to adopt new technologies, such as

- Construction of glass houses in stead of plastic covered green houses or tunnels;
- Soil-less production technologies (substrate-culture);
- Automated production management (climate control and fertigation).

These requirements need high investments that only a small number of farmers can afford, in particular when considering the current constraints in the provision of credits to farmers. It is therefore questionable whether on the long run the small farmers can survive the competition with the larger farms and large scale vegetable production companies. Taking into account that between 50 to 98 % current greenhouses are smaller than 0.3 ha and standard of at least 1.0 ha seems to be necessary in the near future, a drastic decrease in the number of producers may be expected.

Not only in the production but also in the marketing of vegetables drastic changes are expected. At the domestic market and increasing role of the supermarkets is foreseen at the cost of the green markets. The government intends to improve the quality of the produce at the green markets by improving the facilities and setting standards for packaging. In view of quality control there is also a need for tracking and tracing and for that purpose the government is going to introduce the barcode system, which will affect the whole vegetable supply chain. The increasing role of the supermarkets and exporters in the supply chain, including direct supply from producers, may undermine the position of the commissioners, unless they are going to take responsibilities for quality control as well.

3 FARMERS' INFORMATION NEEDS

Many farmers in Turkey are living and farming according to traditions and customs. The agricultural sector, however, is changing very fast, in particular in the horticultural sector. For that reason farmers need to change their farm practice and adjust to increasing domestic and international competition. Adequate information on various aspects of farming, such as production techniques, new technologies, farm economics and financing, as well as on policy measures, subsidies, rules and regulations with respect to markets, food safety and environment, etc. are prerequisites for decision making on future farming.

3.1 Categories of farmers

Horticultural farmers in Antalya province can be categorised in four categories, which have different information needs and are relying on different information sources and advisory services.

The first category consists of semi-subsistence households, the majority of the farms in Antalya. Most of them have small mixed farms with an average of 2-3 ha of land, mainly cereals, orchards, some vegetable production under plastic, and 1 or 2 cows. Vegetables are mainly grown for personal use and for local (street) market. Yields are low; farmers lack knowledge and technologies for modern horticulture as well as capital and land for investments. Their most important information sources are firstly their neighbours and secondly retail shops in the villages, which sell seeds and other farm supplies.

The second category consists of small-scale farmers who are partly specialised in horticulture. They grow vegetables under plastic, on a small scale. Horticultural produce is sold through the wholesale market. They also lack modern horticultural technologies and knowledge but it might be possible for some of them to catch up with domestic market competition and to expand and modernize their farms. Most important sources for advice are the neighbours, retail shops and demonstrations organized by input companies. Generally speaking, they are too small to pay for independent private advisory services. It is estimated that almost 95 % of all growers in Antalya province is not able to pay for independent individual advice. Collaboration in informal study clubs or producer unions is a possible strategy for these farmers to get access to advisory services. One of the respondents stated that a group of farmers with an annual turnover of 10.000 Euro should be able to contract an independent advisor.

The third category are medium-size farmers with green houses of about half and hectare and larger. These growers focus on horticulture and produce mainly for the export market or for the top-level domestic market. The major part of their produce is sold through the wholesale market. These growers are aware of the economic importance of professional advice. They are ready and have the money for paying the services of independent advisors. They need information on the latest developments in production management and accurate and timely information on market developments, including prices and requirements of the export markets.

The fourth category consists of large-scale growers who are directly producing for the export market or large supermarkets without passing by the wholesale market. Some of these farms are part of export companies, in order to safeguard the supply of vegetables in the quantities and quality required by their customers in the export countries. These farms use the most modern production techniques, glasshouses with computer controlled climate control, fertigation etc. These growers or companies have their own experts and can rely on specialized advisors, often from abroad.

In Antalya there is about 90 ha of soil less culture for about 10 farmers who have their own advisors.

3.2 Information needs

During a workshop in Antalya the following information needs were identified:

- Subsidies
- Marketing
- Farmer organisation, how to organise, what are the laws, etc.
- Production planning
- Bookkeeping both technical and financial

- Farm management
- Food safety and environmental issues
- Legislation on pesticide use and inputs is to be implemented, as well as recording, including tracing system with barcode system.
- Good Agricultural Practices

Information needs differ according to the category of farmers. Big farmers are for instance supposed to keep books and small farmers are exempted from doing it. For this last category however, book keeping on technical issues would help them in analysing what is happening on their farm and what can be improved.

Most respondents stated that growers in the first two farm categories have insufficient knowledge on almost all aspects of modern farming. Those with primary education can only be reached by face-to-face advice and demonstration fields. Other media to reach them are radio, TV. More literate farmers can be reached by leaflets and can follow courses.

The third group of medium size growers, in general, have basic knowledge on horticulture and are aware of the fast changing situation in the sector. Their focus is on expanding production and to meet the quality requirements of the market, in particular the export market. One of the respondents said: “four years ago farmers used chemicals without reading instructions, but now they do, not because of the advice by the public advisory system, but because of the strict market rules and regulations for export”. They need information to keep posted on the developments in horticulture and individual advice on farm development in particular on investment decisions.

Another observation made during the workshop in Antalya is that small farmers (those of the second and the third category) often claim to have a marketing problem and need market information, whereas extension workers say that they have production related problems.

Where do farmers find information?

A survey under 400 farmers carried out by one of the interviewed companies, shows that farming neighbours are the major source of information for two third of those farmers. The second most important information source is the commissioner at the wholesale market and the third one the retail shops in the village, who sell seeds and other inputs.

The results of this study were also confirmed by other informants. A farmer needs to see and to discuss how an innovation is working out on his neighbours' farm before deciding to adopt the new technologies himself.

Consequences of the knowledge gap

The consequences of the information and knowledge gap amongst small farmers are lower yields (three times) as compared to more professional farms or companies, who work with qualified staff or private advisors. Improving performance of smaller farms requires regular advice. Most small farmers can not afford independent advice or are not willing to pay for it. Cooperation among farmers in what ever form could be a solution for getting qualified advice on a regular basis.

3.3 Concluding remarks

Most important information sources for farmers are those who are directly working in their supply chain, as well as farming neighbours. Only a limited percentage of farmers is consulting the extension workers or paying for an independent advisor.

Farmers have many information needs that differ according to the farm category they belong to. It is also important to keep in mind that market related information rather than production related information becomes increasingly important for commercial market oriented farmers.

4 THE AGRICULTURAL ADVISORY SYSTEM

The agricultural sector covered by this study is the horticultural sector and in particular in Antalya province. It is important to note that the situation in Antalya province is partly comparable with that in the other horticultural regions such as Marmara, Aegean and the Mediterranean region, but it has not been investigated whether the results of this Rapid Diagnostic Appraisal is also representative for these regions.

This chapter has 5 sections. The first describes the old extension and advisory system and concludes that there is a need for change. It also gives an overview of new policies for agricultural extension. The following section describes advisory organisations, their performance and outreach. Advisory services that are performing should contribute to increasing horticultural production, quality and income for growers in Antalya. Outreach is about numbers and types of growers reached. The last section gives the conclusions of this chapter.

4.1 Advisory and extension policies

4.1.1 The old extension and advisory system

The public (MARA) extension system

The extension policy of MARA has not significantly changed since the eighties. The Public Extension Agency – TEDGEM – is in charge of providing advice to farmers on all aspects of farming. This implies agricultural production techniques, agricultural support schemes, agricultural policies, rules and regulations, research findings and possibilities for accessing subsidies. The prevailing strategy to reach farmers is based upon the Transfer of Technology model or the World Bank Training & Visit method ³⁾

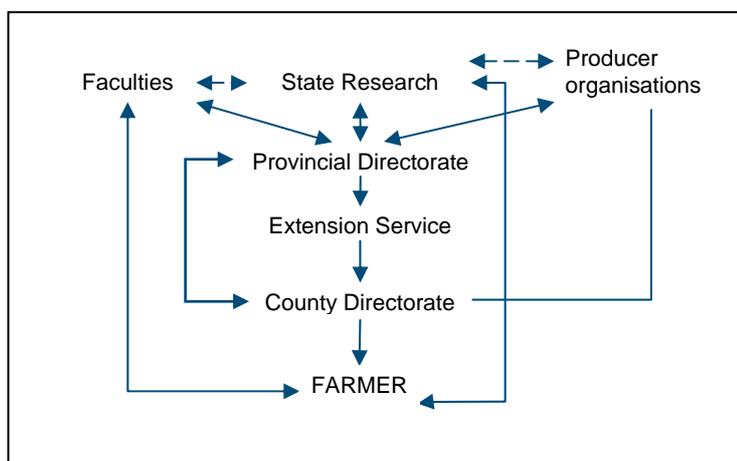


Figure 4.1 The public extension system

MARA is represented in 81 provinces with a Provincial Directorate of Agriculture and 950 County Directorates that serve 35,000 villages in Turkey. MARA at national level is in charge of policy formulation and those policies are implemented at the Provincial and county level. The national extension agency (TEDGEM) is under the General Directorate of Organization and Support of MARA.

Each provincial Directorate has the responsibility to

- Ensure the linkages between researchers and the extension organization;
- Improve the agricultural production system in the province and region by organizing courses on different subjects matters;
- Promote economical returns from farming and farm based activities;
- Implement and control projects that are financed by the agricultural bank;
- Implement the national extension programs.

Each Provincial Directorate of Agriculture has a Division “Farmers Training and Extension” and extension teams at County level. This provincial division is responsible for programming, planning, implementing, monitoring and evaluation of agricultural extension activities in the province ⁴⁾. There are also extension workers at village level, but these are not on the pay-roll of the Ministry.

³⁾ Training and Visit method. An extension management system in which the Village Extension Agent regularly visits contact farmers after receiving training from the Subject Matter Specialists.

⁴⁾ Orhan Ozcataltas, Robin G. Brumfield and Burhan Ozkan; the agricultural information system for farmers in Turkey, in Information Development (ISSN 0266-6669), 2004 SAGE publications vol. 20, No 2.

Producer organisations and their role in extension and advisory

Producer organisations play an important role in the extension system in informing MARA and the Ministry of Industries and Trade on issues that are being raised by their members. Agricultural producer organisations can be classified in three broad categories, namely cooperatives, producer unions and agricultural chambers.

- Both ministries have a law on cooperatives. Agricultural Development Cooperatives and other cooperatives with a production mandate – both on quality, food safety and on quantity - fall under the MARA, whereas cooperatives with explicit marketing and commercial mandates are under the Ministry of Industries and Trade (Agricultural Sales Cooperatives)⁵⁾.
- The law no 5200 of 2004 officially recognises producer unions that are both specialised in certain products or product groups and organised on the basis of province or county.
- The old law on agricultural chambers and on the Union of Turkish agricultural chambers (1963) mandates this organisation to provide free of charge information to its members in line with sector policies and objectives of MARA. Farm membership is compulsory for example for having access to subsidies. There are 4.000.000 members.

Table 4.1 shows that, in terms of outreach and representativeness (in numbers), especially the agricultural chambers and the cooperatives under MARA are important channels for the transfer of information and the provision of advisory services.

Table 4.1. Overview of agricultural producer organisations

Producer organisation	Number	Members	Associations	Ministry
Agricultural Development Coop; Irrigation Coop; Fisheries Coop	9.657	2.631.798 = 66 % of 4.000.000 farms	102 +7 central associations	MARA law 1163 on cooperatives
Agricultural Credit Cooperatives	1.948	1.500.000 = 38 %	16 + 1 central association	MARA law 1581
Agricultural Sales Cooperatives	350	671.928 = 17 %	17 + 1 central association	Ministry of Industries and Trade law 4572
Producer Unions	133	8.566 = 0.2 %		MARA law 5200 – since 2004
Agricultural Chambers	700	4.000.000 = 100 %		MARA law year 1963

Source: Required additional Information Regarding the Subject of Rural Development during the Circumstantial Meeting of Agriculture and Rural Development Chapter, 2006

The position of the producer organisations vis-à-vis the state is not very clear. Whereas Özçatalbaş and others emphasize their NGO status, Burrell and Oskam (2005), call them semi-public organisations depending upon public policy measures and unable to position themselves as independent from the public sector. All producer organisations are being used to inform farm members about national policies, rules and regulations and to channel subsidies to farmers. This is explicitly stated in the law on the agricultural chambers who are mandated by MARA to provide free of charge information to members in line with sector policies and objectives of MARA. The Director Generals of at some central associations, such as the central agricultural credit association, are nominated by the Ministry. At lower levels of the producer organisation, cooperatives, unions and chambers are functioning according to cooperative law.

University Faculties and State Research Institutes

Agricultural faculties and agricultural research organisations are in charge of providing information on agricultural innovations on the basis of research. Research activities are being coordinated by MARA and its General Directorate of Agricultural Research (TAGEM). Turkey has 23 agricultural faculties and there are Research Institutes at central and regional level, as well as subject-oriented Research Institutes.

⁵⁾ Required additional Information Regarding the Subject of Rural Development During the Circumstantial Meeting of Agriculture and Rural Development Chapter, 2006

Overall appreciations of the current extension system

O. Güney, D. Öztürk and O. Biçer and Burrell and Oskam (2005) and other authors described this extension system. Major constraints they identified are:

- Inadequate qualified extension staff although sufficient in number;
- Weak linkages among researchers, extension workers and farmers and their organisations;
- Very little feed back from farmers;
- Political interference on the appointment of staff;
- Limited budget allocated for extension from the PDA budget;
- Lack of coordination between general directorates of MARA;
- Lack of motivation of technical staff;
- Insufficient promotion system;
- Unwillingness to multi-disciplinary working;
- Lack of understanding of socio-cultural factors that have direct effect on the acceptance and adoption of changes in all farming systems;
- Scarcity of farmers' participation in the activities;
- No tradition of on-farm experimentation under farmer's condition and control.

Ozcatalbas, Brumfield and Ozkan (2004) conclude that, while Turkey has many agricultural and related organisations that have made considerable contributions to agricultural development within the country, there is no effective communication between the research and extension institutions. This has hampered the generation and dissemination of new technologies to farmers ⁹⁾

Most interviewed actors operating within the old system, including the Ministry itself, have formulated the same type of conclusions viz. that the old public extension system in Turkey is not successful in delivering high quality advice that can be adopted by farmers and integrated in their farming system.

4.1.2 New policies and trends

Recently, new policies, rules and regulations have been enacted. Relevant policies relate to producer organisations, to the pilot project Koy-mer, to the new advisory law of September 2006 and to the new rural development policies.

New advisory law towards pluralistic extension systems

In September 2006, a new law on a pluralistic extension and advisory system was enacted. Farmers can contract private independent advisor who are officially certified and get 80 % of the advisory costs reimbursed by the Ministry. A certification and registration system will be put in place to ensure the quality of advisors. Advisors need to follow a 2-months' compulsory training programme and pass exams before certification and registration.

In practice, some farmers are already contracting private independent advisors. In this respect the new law is a formalisation and recognition of the already existing pluralistic advisory and extension system.

Currently, the ministry and other actors such as Universities are setting up the certification, training and registration system. Major issues focus on who should develop what course programme and what application procedures and entry requirements are needed for entering the certification and registration procedure. The new law will become operational in 2007. In the new situation there will be three types of advisors

- Public extension workers;
- Private independent advisors who are certified by the state. Agricultural engineers working for cooperatives, producer organisations, or working as an independent advisor for the agricultural chambers can apply for registration;
- Dependent private advisors with a commercial interest in the supply chain. They will not be certified and will not be considered as extension workers or advisors in the new law.

⁹⁾ Orhan Ozcatalbas , Robin G. Brumfield, Burhan Ozkan, The Agricultural Information System for Farmers in Turkey, 2004, Department of Agricultural Economics of Agricultural Faculty, Akdeniz University, 07070 Antalya, Turkey and The State University of New Jersey, SAGE publications 2004

The budget of the ministry for extension activities will decrease and the budget for the setting up of the accreditation, registration and compulsory training program will be increased. This means that the mandate of the public extension agency and its provincial departments will be oriented towards setting up of the new system, rather than continuing with the direct delivery of advice and information.

Pilot Koy-mer project as policy preparation strategy

As of 2004, the Ministry initiated a new extension policy on the basis of the pilot Koy-mer project that aimed at settling privately financed advisors as assistant extension workers in villages. This “Village Centered Support for Agricultural Production” Project is a concrete example of public-private collaboration between the MARA, the Agricultural Chambers and other NGOs. Eligible villages are those that have agricultural production potential, all actors are willing to financially contribute for advisory service and housing possibilities for the advisor are available. In the first year the agricultural chamber and other NGO’s or private companies pay for the services, in the second year farmers pay 5% of the costs and in the third year they pay 10 %. Farmer satisfaction is taken into account for renewing the annual contract between the advisor and the village administration.

Extension topics are the use of inputs, “Direct Income Support” and “National Registry of Farmers Systems”, production planning, credit use and recovery, improved agricultural technologies, farmer organizations for marketing, natural resources management. The village advisors organise group discussions, demonstrations and field days to discuss these topics. Besides service delivery for farmers, the agricultural engineers are in charge of informing authorities about animal and plant epidemics and to establish cooperation between public and private organisations.

The major challenge of this project in the years to come is the mobilisation of private funding to pay advisors. Currently 1,000 villages are being served. For 2007 the aim is to reach 2,500 villages, while there are 35,000 villages in Turkey.

Producer organisations and their role in extension and advisory

The MARA enacted a new law on producer unions in 2004. This law no 5200 officially recognises producer unions that are both specialised in certain products or product groups and organised on the basis of province or county. This law is not yet in compliance with EU regulations on producer unions. One of the major problems is that those unions are not accorded a commercial mandate. These not-for-profit organisations can however contract agricultural engineers as advisor on topics as production, processing, packaging and storage. The new law for the first time provides a legal opportunity for farmers to organise themselves according to a certain crop.

The Ministry of Industries and Trade

The Ministry of Industries and Trade is providing information on laws concerning trade and marketing facilities (wholesale markets), credit facilities and subsidies to the agricultural sales and credit cooperatives. These services can not be provided by the public extension agency, or by producer organisations officially registered under laws from MARA.

EU accession

Advisory services and extension did not have priority so far for the EU Acquis, but with view on the cross compliance support the EU will spend more attention to that in the future. The MARA extension system is supposed to inform farmers about the EU acquis. Within the ministry a new Directorate General for Rural Development will be set up. The question is who will be in charge of informing farmers to fill in forms, because MARA is at this moment fully occupied with the Rural Development Plan and the set up of the Paying Agency. This means that credit cooperatives and NGO’s are not being alerted on the coming possibilities for subsidies for farmers. The payment will be done in the framework of the EPARD regulations and EPARD agency, like SAPARD programmes. Relations between public extension and rural development will become more important in order to address cross-compliance measures and to make those measures known to farmers and rural areas.

4.2 Organisation and performance of the advisory system in Antalya

Many organisations provide information on technical, financial, economic and administrative issues to farmers and they use different media and communication tools for different type of information and for

different categories of farmers. This section describes the actual organisation of the extension and advisory system in Antalya, with a focus on the horticultural sector. Major questions to be answered relate to the type of the organisation, its performance and its outreach. Each organisation will be briefly described, as well as their target group and the nature of the services delivered (supply or demand driven), and communication tools used. Performance will be related to the relevance and the quality of information provided, including the relationship between the advisors and the farmer. Outreach is about what type of farmers are being reached and how many. If relevant and possible the national situation will be described, too.

The following types of organisations have been identified for horticulture and are important for advisory services and extension services in Antalya province.

- Public extension services
- Producer organisations: cooperative structures, chambers of agriculture and producer unions
- Private independent advisory services
- Private dependent advisory services, representing actors directly involved in the supply chain.
- Others, such as research institutes and universities

4.2.1 Public extension services

In Antalya, the Farmers Training and Extension division of PDA employs about 100 staff, of which about 40 at the provincial office and the other in the 14 counties. Officially, extension workers transfer general information on policies, rules and regulations and subsidies, as well as research findings generated by the Research Institutes under MARA to every farmer. Technical topics include EUREPGAP, IPM, Organic farming. In the near future they will also be in charge of transferring information on the legislation on pesticide use and the barcode system for enhanced traceability.

The extension division reaches farmers through contact/key farmers with demonstration fields, group meetings and courses at village level, and by means of mass media, such as television, radio, brochures and leaflets. Farmers with specific requests can consult extension workers at county level, who can refer those questions to higher levels if needed.

Institutional learning and change capacity within MARA and TEDGEM

MARA, TEDGEM and PDA do have weak institutional learning and change capacities to learn from past experiences. Major arguments to support this conclusion are that extension policies did not change significantly since the 1980. The Transfer of Technology model has prevailed in the period 1980 – 2000. Although many projects under MARA provided the opportunity to build up experience with bottom-up and participatory approaches, performance studies and evaluations by agricultural faculties have not resulted in extension policy changes. Recent drivers for policy change come from external organisations like the World Bank, and EU membership.

Competencies and job description of public extension workers.

The farmers' Training and Extension Division within the PDA in Antalya passes about 90 % of its working time with administrative tasks. Out of 40 persons working in the division, only a few are effectively working in extension related activities. Most extension workers are preparing reports, collecting data and information for the Ministry. Extension workers lack a proper job description and often the appropriate qualifications needed. There are limited possibilities for on the job training and specific courses. Many extension workers are not performing because they lack the capacity to build up trustworthy relations with farmers. The top-down extension approach and the lack of on-farm experiences are factors that impact on farmer – extension worker relations.

Targeting and outreach

The public extension agency has the task to provide information to all farmers. In practice they reach only a minority of farmers, mainly the medium and larger scale farmers who have land and capital and are eager to adopt technological innovations. Instead of extension workers coming regularly to villages, farmers have to come to the county or the provincial offices of the extension agency. Small farmers, with limited possibilities for adoption and with a conservative attitude towards innovation will not often address the

extension service, except in case of serious problems, such as plant or animal diseases or in case of financial support.

The extension department at the Provincial Directorate of Agriculture has a specialised section for training women. Women do play a very important role in horticulture, but it is not clear to what extent female labourers in the horticulture sector are being effectively reached.

Budget and operational constraints

The budget for extension does not meet the requirements. The public extension agency lacks the budget for contracting extension workers at village level or for sending provincial and county level extension workers to villages. It is expected that the budget of the ministry for extension activities will decrease.

4.2.2 Producer organisations

Farmers in Turkey are connected to various networks, such as Agricultural Credit Cooperatives, Sales Cooperatives, Development cooperatives and Agricultural Chambers. Apart from their specific tasks, such as providing credit or to organize the market, these organisations function as information channels/providers to the farmers.

All organisations hire agricultural engineers who are transferring information or providing advice to members. The nature of the information provided is directly related to the mandate or the purpose of each cooperative and the purpose of the law under which it has been created. Some examples are:

- The Turkish Agricultural Chamber plays an explicit role in informing the PDA about farmer problems. The central office of the Union of Turkish Agricultural Chambers in Ankara prepares leaflets and magazines for farmers (2300 per month) mainly used by the staff of the local chambers but also consulted by farmers at the local chamber. The advisory services provided by them are free of charge.
- The Agricultural Development Cooperatives have a small staff, depending on the cooperatives' purpose and they are providing free of charge advice upon request of its members. They do not have professional advisors, since the cooperatives are not financially viable to pay for advice
- The Union of Agricultural Credit Cooperatives provides free of charge services and courses to farmers and cooperatives. They elaborate an annual training programme.
- All producer organisations, including the new producer unions do have the possibility to contract an agricultural engineer who can work as an advisor, but it is not known how many agricultural engineers are being paid by those organisations.

Strong governmental influence on producer organisations' performance and service delivery

The different laws describe the conditions for creation of producer organisations. Non respect of these means no access to subsidies and other support from the ministry. Another very important constraint for providing relevant advice and services to members relates to the institutional division of mandates between MARA and the Ministry of Industries and Trade. This constraint has been mentioned by several actors as having an impact on the functioning of the new producer unions, who are under MARA and therefore do not have the possibilities to develop collective commercial and marketing activities.

Performance of producer organisations for advisory services provision

Only some information on the performance of producer organisations has been obtained.

- Agricultural credit cooperatives are acknowledged for having good relations based upon trust with their members and therefore are an important channel for providing advice. They represent 38 % of all farmers registered at the agricultural chambers. As compared to all organisations that deliver information to farmers they are closest to farmers. The central union prepares an annual training programme and trains 3000 persons per year mainly on credit topics, computer literacy and other topics that fall under the mandate and objectives of the agricultural credit cooperatives.
- Agricultural development cooperatives represent about 20 % of all farmers registered at the agricultural chambers. Because of their multi-purpose objectives they are not expected to be tailored to the specific needs of growers. The advice is provided for free.
- The new producer unions are still too few to play an important role in extension and advisory service for fruits and vegetables. But most actors have high expectations on the role of those unions for improved advisory services and for marketing. They are also useful for the organisation of small farmers to sell their produce, to get economies of scale in marketing and packaging and provide

appropriate advice. According to some information sources, even 5-10 growers whose joint turnover is approximately 10.000 Euro could hire an independent advisor, start branding their products, get EUREPGAP certification and post-harvest treatment and storage.

Types of advice provided

The first type of advice provided by producer organisations to their members is related to the mandate and the purpose of each type of producer organisation. Besides this, agricultural engineers working in respective organizations or contracted as an advisor do provide members with all kinds of information that they are able to find by searching on the internet or by contacting specific information providers.

4.2.3 Private independent advisory services

Only recently, private advisors have started their business in the regions where specialised farms are present. Most of the private advisors are young agricultural engineers who have some years of working experiences in private companies. Estimations upon the number of private advisors in Antalya vary from 30 to 40 persons in Antalya province. Some of those advisors are working for one of the fifteen companies specialised in advisory services. Clients are especially those growers who mainly produce for the export market. The advisor visits his clients every week and advises him on all aspects of production and marketing.

The relation between the private advisors and farmers is settled in contracts. The advisors mainly charge a fixed amount per growing season according to farm size.

Outreach and demand

The demand for private advisors in Antalya province is difficult to estimate. Assuming that for technical assistance from private independent advisors 1 person per 10 hectare green houses is required⁷), about 75 – 100 independent advisors would be needed for the about 1,750-2,000 hectares of horticultural land, instead of the 30– 40 available actually.

However, these estimations do not compensate for the many small farmers who can not or are not willing to pay for independent advice. The DPA estimates that an average farmer with 0.35 hectare of greenhouses has to pay 200 Euro for his 0.35 ha, which is affordable for these farms.

Performance of services provided

There is not much information on the quality of the services provided. Some advisors are giving good professional advice whereas others may lack the qualifications for doing so. There are many young agricultural engineers who are looking for working opportunities in the agricultural sector. This also implies that they take the current opportunity to start working as an advisor. With the user-pay principle in place for independent advisors, one may expect that the advice provided by these advisors meets the demand.

According to farmers and other actors a good independent advisor should meet the following criteria:

- Being an agricultural engineer;
- Having some years of working experience;
- Having feeling with and preferably on-farm working experience, in order to be able to communicate with farmers.

Both the independent advisors themselves and the MARA are working on quality control and improvement:

- With the new advisory law of 2006, the MARA aims at training both public and private independent advisors. Persons who do pass the exams at the end of the two-months training programme will receive a certification and they will be registered as an advisor. This system should help growers to select the right advisor.
- Independent advisors are continuously improving the quality of their work and updating their knowledge. Most of them have previously worked in companies in the supply chain, such as large growers and seed companies, where they received on the job training. Most of them are consulting

⁷ Information obtained during workshop in Antalya, This has been presented as a technical norm.

specialist magazines and internet, attending seminars and workshops, and use the information provided by agro supply companies during sales visits, demonstration days etc. to update their knowledge. If necessary they contact experts of companies and research institutes for specific questions. Recently a group of independent advisors organised themselves in an association of independent advisors, with the aim to exchange experiences, to collectively update knowledge and information by experts of suppliers and to make business agreements.

Trends

Both the extension policies in place and the horticulture market do encourage young agricultural engineers with some years of practical working experience to set up their independent advisory company. Currently there is an insufficient number of independent advisors (40 in stead of 75-100 persons needed). They will find individual clients who are willing and can afford to pay for advice. Another potential client group are producer unions – both formal and informally organised study clubs.

4.2.4 Private dependent advisory services,

An important role in the information supply to farmers is played by companies and other actors in the vegetable and fruit supply chain, such as seed companies, agricultural retail shops, commissioners in wholesale markets and the exporters' union.

In this category, the bigger input suppliers with international connections employ agricultural engineers who are in charge of introducing new varieties, to increase the adoption rate of new varieties and to provide information on production techniques. The agricultural engineers receive in-house training on production techniques and extension methodologies. The seed companies have a network of growers who cooperate with them and organise demonstration days. Per demonstration day, some 50-100 farmers are coming. Other communication tools are leaflets for farmers on many aspects of production technologies and marketing opportunities. The information is provided free of charge.

Also retail shops and exporters' unions do make information available to potential clients. Retail shops will explain the use and the dosage of chemicals, seeds and other inputs together with the inputs they sell.

Commissioners at the wholesale market play a key role in marketing fruits and vegetables. They are often mentioned as an important information source for farmers. Because the increasing demands for quality products, some commissioners are taking a pro-active position and contract agricultural engineers to provide free of charge information on food quality and safety requirements to farmers.

Performance of dependent advisors

Private dependent advisors, especially seed companies and chemical companies play an important role in advising growers about production technologies, the use of chemicals and the selection of seeds. The quality of the advice provided highly depends on the advisors and the balance between their commercial interest and the farmers' interests.

Generally speaking, it may be expected that dependent advisors working for specialist seed companies provide good quality and reliable information on the products to the farmers, because that serves the commercial interests. The quality advice provided by the retail shops depends more on the personal qualities of the shopkeeper.

The new advisory law does not include the certification of dependent advisors.

4.2.5 Universities and research institutes.

In Antalya three other actors were identified who are involved in extension and advisory services.

- The first actor is the West Mediterranean Agricultural Research Institute (Bati Akdeniz Agricultural Research Institute, BATEM) which belongs to the Directorate General of Agricultural Research under MARA. In 2004 they started an extension and economic department to inform the agricultural sector. Currently 10 persons are involved in extension activities by means of weekly seminars in the winter period. Those seminars are attended by some 50 persons from companies (about 50%), private and public advisors, and scientists. BATEM also organises 3-4 days workshops twice a month, disseminates

leaflets on various topics through PDA extension service and issues the national referred research journal 'DERİM'. Radio and television are used for the dissemination of research results.

- The second actor is the Agricultural faculty of Akdeniz University in Antalya. Some staff members are providing advice to farmers upon request. The official mandate of the agricultural faculties in Turkey, however, does not include an outreach function with regard to agricultural development and extension services.
- The third actor is a Turkey-Dutch cooperation project that is organising farmers in study clubs following the experiences in the Netherlands. The number of study clubs, where farmers meet periodically on each others farm to discuss agricultural issues at large, is steadily increasing. These study clubs are autonomous entities and they have not been created by law.

Performance

Information is lacking about the quality of advice provided by the research institute and by the staff of the agricultural faculties. Outreach is probably limited because advisory services are not part of the official mandate of the agricultural faculties. The research institute is able to give good advice to both public and private advisors, as well as farmers who attend demonstration days, seminars and workshops. The advice is supply driven, starting from the ongoing research activities. It may be expected that increasing contact with farmers and private advisors will shift the research agenda more in the direction of the farmers needs.

4.3 Concluding remarks

New promising policies are the new advisory law that officially recognises the existence of a pluriform extension system; the very ambitious intention of MARA to locate assistant MARA extension workers at village level and the new rural development policy that probably will reorient the job description of extension workers. Promising is also the new law on Producer Unions, that will play an important role in advisory services next to the existing producer organisations such as the chambers and the cooperatives.

There are many organisations in Antalya that provide information and knowledge to farmers in the horticulture sector. It may be concluded that the current extension and advisory system is pluralistic. Most of the information provided is given free of charge and is supply oriented, aiming at the transfer of information on policies, subsidies, technologies and research findings (public extension system, producer organisations, research institutes and bigger input companies).

The performance of the advisory services in terms of increasing horticultural production, quality and income for growers in Antalya, as well as the outreach in terms of numbers and types of growers reached are briefly summarised in the following table.

Table 4.2 Performance and outreach of extension and advisory services

Organisation	Performance	Outreach	Trends
Public extension services	<ul style="list-style-type: none"> • Rather inflexible hierarchical organization • Not able to learn from past experiences • Weak organisational performance • Not client/farmer oriented but policy oriented • Lack of qualified extension workers (insufficient knowledge, communication skills, attitude) • Extension workers lack the trust of farmers • Insufficient operational budget to descend to villages 	<p>Officially: all farmers, but in practice:</p> <ul style="list-style-type: none"> • Medium and large-scale farmers, coming to the extension service with specific questions and who have the attitude, land and capital to introduce innovations • Farmers with better education levels. • Using mass media rather than face-to-face approaches 	<p>Public extension service will probably get a new role in</p> <ul style="list-style-type: none"> • the compulsory training and certification system for independent advisors • providing extension services for rural development rather than commercial farming • Propagating agricultural and rural policies and regulations • Stimulating farmers in participating in national and EU support schemes
Producer organisations	<ul style="list-style-type: none"> • Do have specific knowledge according to the purpose of their organisation and mandate of related ministry • Credit cooperatives are known to be an important information channel and that are trusted by members • No information available on the numbers of advisors in these organisation neither about the quality of advice provided 	<ul style="list-style-type: none"> • All members, i.e. large number of farmers • Members who have specific information requests • Face-to-face communication • Leaflets and brochures 	<ul style="list-style-type: none"> • For specific advice on horticulture, the producer unions are promising, but they are not widely present yet. • These organisations are not (yet) in line with EU regulations • Potential to reach smaller growers by agricultural credit cooperatives and producer unions.
Independent advisors	<ul style="list-style-type: none"> • In general, young advisors who provide up-to-date, qualified advice that is tailored to the clients, • Trusted by clients • Continuously updating knowledge, skills and attitudes 	<ul style="list-style-type: none"> • All growers willing and able to pay for independent advice • Weekly visits, 100 growers per advisor • 30-40 companies with 1,2,3 advisors in Antalya, reaching about 3000 farmers (estimation) 	<ul style="list-style-type: none"> • Not (yet) enough independent advisors in terms of quantity to serve all growers who need advice • Growing demand for professional advice from farmers who are focussing on the export market, to comply with international regulations.
Dependent advisors	<ul style="list-style-type: none"> • Performance is depending upon commercial interests and knowledge of the products that are being sold 	<ul style="list-style-type: none"> • All growers can get information because it is for free • Demonstration fields at contact farmers and face-to-face 	<ul style="list-style-type: none"> • Commissioners engage in advisory activities • Big input suppliers are investing in providing good advice to the sector.

Trends and opportunities for improving the extension system

- The role, the mandate and the budget of the public extension system for supporting the further development of the horticultural sector will probably decline. Extension divisions within the Provincial Directorate of Agriculture will get new responsibilities in the design and implementation of training and certification programmes of private advisors.
- The extension agency is also expected to focus on propagating agricultural policies and related measures and support measures for farmers, for instance in the new Rural Development policy that has been recently drafted.
- Both the extension policies in place and the horticulture market will encourage young agricultural engineers with some years of practical working experience in the supply chain to set up private independent advisory services.. They will find individual clients who are willing and can afford to pay for advice.
- Another client group they can orient themselves on are producer unions – both formal and informal such as the study clubs. The number of those study clubs is increasing in the last years.
- Dependent advisors in the supply chain, especially big seed companies and more recently some commissioners, are investing in training and contracting agricultural advisors who are in charge of providing high quality and relevant advice. It is expected that they will play a leading role in modernizing the horticultural sector in combination with the private independent advisors.

Improving the performance of the horticultural supply chain in Antalya province would in the first place target the small-scale growers, partly specialised in horticulture and medium-size farmers with greenhouses of about 0.5 hectare and larger. Improving advisory services for these farmer categories implies that especially extension workers who want to specialise in horticulture (there are about 30 persons willing to do so) independent advisors and people directly working in the supply chain and who provide dependent advice should become the most important beneficiaries of projects or strategies that aim at reinforcing advisory services.

Another strategy of improving the performance of advisory services would be oriented towards setting up quality control systems, such as foreseen in the new advisory law. This law foresees the establishment of a registration and certification system of advisors on the basis of compulsory training courses for advisors.

5 THE AGRICULTURAL EDUCATION SYSTEM

Many resource persons have highlighted two important educational institutional constraints to agricultural innovation and modernization of the horticulture sector.

The first is the low education level of farmers and the second is the match between market demand for good agricultural advisors and the agricultural engineers produced by the current education system. Most young agricultural engineers lack a farm background and hands-on experience (“they do not have green fingers”). According to many resource persons, a good advisor is an agricultural engineer, who

- has some years of working experience in the sector,
- has feeling for agriculture, in order to be able to communicate with farmers, and
- has on-farm experience, preferably a farm back ground.

This chapter analyses those statements and formulates recommendations for improving the agricultural education system. The description of the education level in Antalya in 6.2 confirms that the education level of most farmers is very low. The second section tries to explain why agricultural engineers do often not have green fingers, no hands on experience and why they are not having a farm background. This section confirms the mismatch between the competences of young agricultural engineers and competences needed to become a good advisor.

5.1 The education level in the agricultural sector in Antalya

Only one third of the population of Antalya older than 12 years has received more than basic education, i.e. primary and secondary education (see table 5.1 The education level of women is even lower.

Table 5.1: Education level of the population in Antalya of 12 years and older, according to gender, in 2000

Education level	Men		Women		Total	
	Absolute ⁸⁾	%	absolute	%	absolute	%
<i>Total population 12 years and older</i>	708,000		664,000		1,372,000	
Illiterate	21,240	3	85,656	12.9	106,896	7.8
Less than high school (15-18 years)	468,696	66.2	419,648	63.2	888,344	64.8
High school	103,368	14.6	81,672	12.3	185,040	13.5
Vocational high school	36,816	5.2	24,568	3.7	61,384	4.5
University and higher education	75,048	10.6	49,800	7.5	124,848	9.1
Unknown	2,124	0.3	1,992	0.3	4,116	0.3
Sum of previous categories	707,292	100	663,336	100	1,370,628	100.0

Calculations based upon: Turkey's Labour Market; A description of the developments from 1990 onwards, Labour Market Team SVET project, Strengthening the Vocational Education and Training System in Turkey, Labour Market Report – draft December 2005, Ankara, 20 May 2006

In terms of education level, Antalya province is ahead of many other provinces. The educational level of the population will probably rise, because of the new Basic Education Law (active since 1997) that extends the compulsory schooling from five years to eight years.

The Labour Force Participation Rate (LFPR) in 2000 of men in Antalya Province is 73 % and 46 % for women and 60 % for both men and women together. The highest unemployment rates are found among those with a general or vocational high school level.

Between 1990 and 2000 the employment rate has dropped in practically all provinces for all education levels, including university or higher education. This stimulates those coming from university or other higher education schools to set up their own business.

⁸⁾ The absolute figures according to education level, where calculated upon the basis of round off percentages in the report. This implies that there are some disparities in totals provided by the labour market report and the results of the calculations presented in this table.

Table 5.2: Education level of the labour working in agriculture, forestry, fisheries or hunting, in Antalya Province in 2000.

Education level	Labour force older than 12 years	Of which working in agriculture, forestry, fisheries or hunting	Education level in agriculture	
	absolute	absolute	%	%
<i>Total population</i>	824,936	411,643	49.9	
Illiterate	59,929	56,633	94.5	14.0
Less than high school	531,235	317,147	59.7	78.3
High school	113,961	22,678	19.9	5.6
Vocational high school	32,813	4,003	12.2	1.0
University and higher education	86,513	4,585	5.3	1.1
Unknown	15			
Sum of previous categories	824,466	405,047		100.0

Calculations based upon: Turkey's Labour Market; A description of the developments from 1990 onwards, Labour Market Team SVET project, Strengthening the Vocational Education and Training System in Turkey, Labour Market Report – draft December 2005, Ankara, 20 May 2006

50 % of the total population older than 12 years is working in agriculture, fisheries, forestry and hunting (see table 5.2). This is the most important employment sector, followed by the wholesale and retail trade, hotels and restaurants sector (18 % of the labour force).

Table 5.2 also shows also that the agricultural, fisheries, forestry and hunting sector employs 95 % of all illiterates in Antalya and 60 % of people with less than high school education level. Approximately 92 % of all people working in this sector are illiterate or do have less than high school level education.

On the basis of these figures the following conclusions can be drawn:

- Whereas 73 % of the total population more then 12 years old in Antalya province has less than high school education, the education level of the people working in the agriculture sector is extremely low (92 %). This situation will probably improve because the number of compulsory schooling years has been raised from five years to eight years in 1997.
- There is a big gender disparity in education levels between men and women. Taking into account that especially women are being absorbed as labour force in the horticulture sector, this is also a constraint to innovation in horticulture. Women will face difficulties in adopting new technologies and rules and regulations that need to be respected at the work floor.

This implies that the introduction of new technologies and innovations in the horticulture sector heavily relies upon the use of advisory methods that are suitable for people that can hardly read and write. This means that face-to-face advisory methods and field demonstrations are more likely to result in changes than written material. This is a very intensive and costly approach.

The low education level of people in the agricultural sector also hampers their participation in adult education courses.

It may therefore be expected that the driving force for innovation in agriculture will not come from the current older farmers but from the younger generation with secondary or higher education levels who intend to establish their own farm business.

5.2 Description of the agricultural education system in Turkey

This section describes the education system in Turkey. The description is limited to the education system after the age of 14 and to the agricultural sector. This means that the focus will be on the agricultural vocational high school and on the agricultural faculties. Next to vocational high schools, children can also enter technical or general high schools, before eventually entering university level education for agriculture.

Agricultural Vocational High schools

After finishing compulsory basic education at the age of 14, students may attend a vocational high school. This involves a three-year diploma programme aimed at training qualified people for various professions and also preparing students for higher education. There are 18 Agricultural Vocational High schools, of which 13 schools have been recently transferred to the Ministry of National Education (A.M. Burrell and A.J. Oskam, 2005). The other five agricultural high schools are still under the responsibility of MARA and are focussing on specific tasks such as the training of staff for laboratory. The 18 agricultural schools have nowadays approximately 2000 students.

The major specialisations at the agricultural schools are general agriculture, agricultural technologies, agricultural machinery, laboratory, food technology, veterinary and rural environment. The centres combine theoretical and practical education. For that purpose the schools manage various types of farms. These farms operate partly as commercial farms, producing and selling produce. The major part of the budget (80%), however, comes from the government.

There is no agricultural vocational high school in Antalya province. The number of higher agricultural schools is far too low to provide the required educational level for future farmers.

There is no information available on the quality of the agricultural education programmes, but taking into account that those schools have been neglected for more than 20 years, their education programme will not match current labour market requirements for the agricultural sector. There is a general complaint of employers that the quality of graduates of higher vocational colleges does not meet labour market needs. If higher vocational education would properly match labour market needs, it could become an alternative for the bachelor programmes.

The new curriculum of the agricultural vocational high schools will be extended from 3 to 4 years in order to improve the linkages with higher education and with general secondary education.

Entering higher agricultural education

There are two ways to enter higher agricultural education. The first way is to enter into the higher vocational education programmes that are being offered by Universities. The second way is to immediately enter into the Bachelors and MSc programme⁹⁾.

Higher vocational education programmes at the university.

Students with a diploma from technical or vocational high school can enter the higher vocational education programme without participating in the central Student Selection Examination (ÖSS). After completion of this 2 year programme they can enter into the bachelor and MSc programme. In practise, graduates of vocational high schools most likely enrol in higher vocational education but hardly gain access in programmes that lead to a bachelor's degree.

BSC programmes of Agricultural Universities.

The Council of Higher Education is the fully autonomous supreme corporate public body responsible for the planning, coordination, governance and supervision of higher education within the provisions set forth in the Constitution (Articles 130 and 131) and the Higher Education Law (Law No. 2547). It has no political or governmental affiliation.

This council, by means of its centrally organised Student Selection and Placement System is in charge of selecting and admitting students for undergraduate programmes. The aim of this system is to

- Balance the demand for higher education and the places available in higher education institutions.
- Select and place students with the highest probability of success in all the available higher education programs, taking into consideration their preferences, and performance on the centrally organised Student Selection Examination (ÖSS).

Only 35 % of all applications results in a place at University and not everyone can follow his or her preferred education. Students with high ÖSS scores and high notes from technical or vocational high schools have more change to be admitted in a study programme they preferred than those who do not come from those typical schools and who do not have high notes.

⁹⁾ OSYM report, 2006.

Higher agricultural education

Higher agricultural education is provided by 23 Faculties of Agriculture with an estimated 25.000 undergraduate students. All the faculties offer a 4 or 5 year bachelors' programmes and most of them higher degrees, too. The first task of post graduate programmes at agricultural and veterinary faculties is apparently preparing researchers for Turkey's research institutions. The research effort/task/results/performance of the faculties is constrained by high teaching loads, lack of coherent research strategies, weak links with other research institutions and inadequate research resources (A.M. Burrel and A.J. Oskam, 2005).

Until 1986 graduates were employed by MARA by rule, but this rule has been abolished. The 23 agricultural faculties are delivering too many graduates on the labour market. Most agricultural engineers end up in a non-agricultural job. Many students do not enter the agricultural universities by personal preferences and motivation but because of the entrance selection procedure. This procedure may negatively impact on the motivation of students at the agricultural universities and their working performance after graduation.

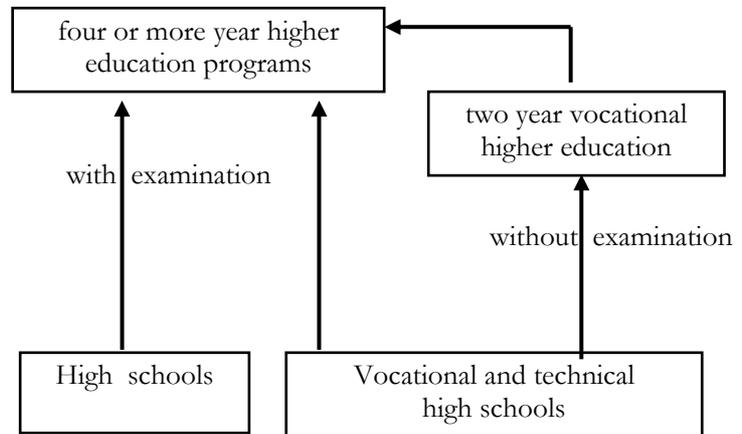


Figure 6.1: Entering higher education, Source: ÖSYM, 2006

Contrary to the Land Grant Universities in the USA with an outreach mandate, the university system in Turkey is following a Humboldt approach, limiting their mandate to higher education and scientific research. In practice, however, universities play a role in training advisors and extension workers. The new advisory law also includes universities in the development of the training and certification system of advisors.

All students follow compulsory courses in extension approaches and methodologies. Following the respondents these curricula need to be revised and adjusted to new insights. Because many students at the agricultural universities lack an agricultural background, it would be necessary to familiarize them with the practice during the study. Possibilities for internships in a company in the agricultural sector are however limited.

5.3 Concluding remarks

More than ninety percent of the population working in the agricultural sector in Antalya has some year of education at primary school. There is also a big gender disparity in education levels between men and women. Professionalization of agriculture by specific education for farmers is rather difficult because there is no Agricultural Vocational High School in Antalya Province. This is a general problem in Turkey, whose economy is based upon agricultural production. The low education level of people in the agricultural sector also hampers their participation in adult education courses.

Consequently, the introduction of new technologies and innovations in the horticulture sector heavily relies on the advisory system and in that the use of advisory methods that are suitable for people that can hardly read and write. This means that face-to-face advisory methods and field demonstrations are more likely to result in innovations than leaflets and written materials. This is a very intensive and costly approach.

It is assumed that most innovation in the horticultural sector will come from young people with secondary or higher education levels who start a farm as a business opportunity, rather than from farmers with a low education level.

The centralised student examination and placing system is a major constraint of admitting students with a farm background or with a preference for agriculture sciences at agricultural faculties. As a consequence, students' motivation in general is low during the education programme. Many of them are not familiar

with agriculture and there are not sufficient possibilities for internships in the sector, so that young agricultural engineers do lack the specific competences needed for an agricultural advisor.

Some positive changes in the agricultural education system are the 1997 law that raised the number of compulsory schooling years from five years to eight years. Furthermore, the Ministry of Education is committed to improving and readjusting the curriculum of the 13 agricultural vocational schools, amongst others with the support of the EU MEGEP program for vocational education. Although the number of agricultural schools is by far sufficient, this initiative is a good start.

It is also promising that the agricultural faculties recognise the importance of improving their programmes for extension and advisory services and for preparing their students for a job in the private sector. They are also recognising the importance of playing a role as an outreach centre.

Strategies or projects that would reinforce the positive trends that are already observable should consist of improving the education programmes for the vocational agricultural high schools in line with the EU MEGEP program, increase the number of vocational agricultural high schools (if there is a market for job in the agricultural sector) and improve the extension programmes at the agricultural faculties.

6 CONCLUSIONS AND STRATEGIES FOR COLLABORATION

6.1 Matching information needs and supply in horticulture in Antalya

This chapter answers the question to what extent current extension and advisory services in Turkey are capable of meeting the specific information needs of farmers. The answer to this question will depart from the four categories of farmers that have been distinguished before.

The semi-subsistence households represent the majority of farmers in Antalya. Major constraints they face in obtaining an answer to their information needs are:

- Their low education levels that hamper them to acquire and internalise new knowledge;
- The weak performance of the public extension service to provide them with professional advice through face-to-face advice and demonstration fields.

The most important information sources for these small farmers are farming neighbours (most important), and retail shops in the villages.

Small commercial farmers who are already specialising in horticulture and who are selling part of their fruits and vegetable at the wholesale market. The major constraints they face in obtaining an answer to their information needs are:

- Low education levels that hamper them to acquire and internalise new knowledge;
- They often do not recognise the importance of professional advice for increasing yields and quality;
- Low organisation level in terms of a producer union for horticultural crops. This is because those organisations have only recently been set up.

The most important information sources for this category of growers are neighbours, retail shops, demonstration days by input suppliers and commissioners at the wholesale market.

A possibility for the farmers to obtain professional advice might be to jointly hire independent advisors and setting up study clubs of growers.

Medium and large-scale growers who are mainly producing for the export market or for the top-level of the domestic market. They contract independent advisors besides other information sources, such as public extension workers, input suppliers who organise demonstration days, eventually internet, magazines and other written materials.

There is a demand for independent advisors who can provide good quality advice for this category of farmers.

The very large growers or companies, who are directly producing for the export market without passing by the wholesale market, hire independent advisors from abroad if national expertise is not available or they will obtain information from their clients abroad or the big supermarkets.

6.2 Trends and opportunities for collaboration

Horticultural supply chain

Driving forces of the modernization of the horticultural sector in Antalya are the export markets and the increasing demand for high quality vegetables on the domestic market in Turkey.

Constraints are the availability of capital and credit facilities to invest in new technologies and the organisation and communication in the horticultural supply chain. The position and the role of the commissioners in the supply chain is very important in the introduction of food safety and quality regulations and environmentally sound production technologies that are in line with the EU acquis communautaire.

The area of greenhouses is steadily increasing. The share of Antalya in the export volume of fruits and vegetables is higher than the national share, and Antalya is exporting relatively higher valuable produce. But the grand majority of vegetables grown are meant for the domestic market and a larger part is sold unsorted on the domestic market. Due to the expected growth in income and increasing consumers' concerns with respect to food safety and environment, domestic consumer demand for high quality vegetables will increase as it is already the case for the export market. At the domestic market an

increasing role of the supermarkets is foreseen at the cost of the wholesale markets. The government intends to improve the quality of the produce at the green markets by improving the facilities and setting standards for packaging. In view of quality control there is also a need for tracking and tracing and for that purpose the government is going to introduce the barcode system, which will affect the whole vegetable supply chain. The increasing role of the supermarkets and exporters in the supply chain, including direct supply from producers, may undermine the position of the commissioners, unless they are going to take responsibilities for quality control as well.

Taking into account that

- the most important information sources for farmers are those who are directly working in their supply chain, as well as the neighbours and
- that farmers are eager to obtain market related information,

we can conclude that strategies and projects for improved information transfer should focus on knowledge transfer and circulation within the supply chain. This knowledge generation amongst all stakeholders in the chain contributes to jointly solving marketing constraints, improving food safety and quality and other Good Agricultural Practices.

Agricultural advisory system

Driving forces for improved advisory services are coming from the horticultural supply chain that needs updated and modern information for improved market access to the EU and for the top level of the domestic market. Another driving force is the recognition by the government of a pluralistic advisory system that enables different types of advisors to work according to different principles with different categories of farmers.

The new law for producer unions is promising in improving advisory services for particular crops or product groups, but the official mandate of the producer unions described in the law does not match with farmer expectations and interests in organising themselves in producer union.

Strategies or potential projects that improve advisory services should

- in particular target extension workers who want to specialise in horticulture (there are about 30 persons willing to do so), independent advisors and people directly working in the supply chain and who provide dependant advice.
- be oriented towards setting up quality control systems, such as foreseen in the new advisory law. This law foresees the establishment of a registration and certification system of advisors on the basis of compulsory training courses for advisors.

Agricultural education system

Three major constraints for the modernization of horticulture in Antalya province are:

- About ninety percent of the population working in the agricultural sector has not finished high school. There is a big gender disparity in education levels between men and women. There is no Agricultural Vocational High School in Antalya Province, thus hampering the professionalization of the agricultural sector.
- The centralised student examination and placing system for higher education is a major constraint of admitting students with a farm background or with a preference for agriculture sciences at agricultural faculties. In consequence, student motivation is low during the education programme, and young agricultural engineers do lack the specific competences needed to start as an advisor.
- The higher vocational school programmes at university do not prepare students for professional jobs, nor do the BSc and MSc programmes of the agricultural faculties.

Positive trends are:

- The number of compulsory schooling years that have been raised from five years to eight years. This means that education level amongst the farm population will increase.
- The Ministry of Education, together with the EU MEGEP for vocational education is committed to improving and readjusting the curriculum of the 13 agricultural vocational schools. Although the number of agricultural schools is by far not sufficient, this initiative is a good start.

- The agricultural faculties recognise the importance of improving their programmes for extension and advisory services and for preparing their students for a job in the private sector. They are also recognising the importance of playing a role as an outreach centre.

Strategies or projects for improving agricultural education should at the first place focus on curriculum development in line with labour market opportunities in the agricultural sector and prepare people for a career directly in the market chain, rather than in the supporting system of research, advisory or policy.

6.3 Strategies for collaboration

Respondents have identified many institutional factors that hamper the modernisation of the horticultural sector and which need to be addressed at the political level. They have, however, also identified strategies and opportunities for collaboration between Turkish and Dutch knowledge institutions for capacity building in the field of agricultural education and advice.

All actors have emphasised the importance of improving the quality of advisory services for the horticultural sector. Some estimated that the horticultural production could triple if good and relevant advice is being timely made available to growers. Actions to improve the quality and quantity of horticultural products should preferably be oriented to those categories of small and medium growers that are already intending to increase their production, in particular with view on export. These growers are willing to pay for professional advice individually or jointly via study clubs or producer unions.

In consequence, actions to improve the Turkish advisory services in horticulture should focus on improvement of the services delivered by independent advisors, young agricultural graduates under contract of producer organisations or within companies in the supply chain, be it input supply companies, commissioners at the wholesale market or the export union or companies involved in marketing fruits and vegetables.

The strategies or possible project for collaboration that are being described in the following are aiming at improving:

- Advisors' knowledge and access to information on horticulture
- Farmers' knowledge and access to advisory and extension services
- Assisting the Turkish Government in setting up a certification, training and registration system for advisors.
- Agricultural vocational and higher education.
- Modernisation of the horticultural supply chain in Antalya through concerted actions of stakeholders.

Those different strategies have been clustered in 3 types of projects

- a. Setting up a training and resource centre for farmers and/or for advisors
- b. Improving agricultural vocational and higher education
- c. Modernisation of the horticultural supply chain in Antalya through concerted actions of stakeholders.

6.3.1 Setting up a training and resource centre for farmers and/or for advisors

This project aims at both strengthening the advisory capacities of farmers, training and informing farmers on issues relevant for the horticultural sector and setting up an information or resource centre for all people working in horticulture.

Such a project could also respond to a request of the Agricultural Faculties to assist in the setting up of a registration, compulsory training component and a certification system for advisors under the new advisory law.

Training centre for advisors

Most of the respondents both from public and private organizations were in favour of establishing a training centre for agricultural advisors. The aim of the centre would be to provide professional training on all aspects of horticulture to advisors and trainers.

The character and the institutional set-up of such a centre is yet to be defined. This is in particular valid for the institutional hosting of such a centre. Should it be hosted by the agricultural faculty, or by the DPA or by a private organisation that is specialised in advisory training? Before starting a centre a targeted business plan need to be developed, including aspects such as:

- Who are the final clients of the advisors to be trained, what farmers, according to size and type?
- Who are the target clients/advisors of the courses?
- Differences in starting courses and refreshing courses
- Financial aspects
- Institutional aspects

Types of training and courses to be provided

The content and the types of courses and training needs to be determined at the beginning of the project, in line with competencies needed for good advisory practice and for providing professional advise in the horticultural sector in Antalya Province. At the moment the following ideas have been listed.

- One year courses that prepare agricultural engineers with some years of working experience for the profession of advisor.
- Short refresher courses to update advisors' knowledge
- Courses that include internships at farm level or within companies in order to provide agricultural engineers with on-the-job experience (farmer, advisor, manager etc)
- Curricula and course programmes should contain both technical topics, economical topics, marketing, administrative topics that include information on subsidies.
- All advisors should be trained in communication skills. With regard to communication skills there are at least two different advisory strategies to be taken into account. The first one consists of on-farm advisory skills for bigger farmers; the second consists of facilitation and moderation skills needed to set up and strengthen the organizational performance of producer organizations (meeting management, strategic action planning etc).

Depending on the implementation of the new advisory law, these training centres could also play a role in the compulsory training programme for advisors who want to be registered and certified.

Curricula development and course delivery

Curricula development and course delivery should be done with relevant actors in horticulture. Lecturers in University, owners of private companies, and commissioners in wholesale markets, private advisory associations, public extension workers, producer organizations or cooperatives, and farmers should be involved in a joint action to formulate the curriculum and deliver parts of the training programme.

Possible subsequent steps in the development of training programmes for advisors are:

- Information needs assessment at farm level, distinguishing different types of farmers.
- Making competency profiles for different type of agricultural advisors. This implies amongst others things, that public extension workers will have another competency profile than private advisors or advisors working for producer organizations, cooperatives, wholesale markets or input suppliers.
- Designing courses and course programs (course description) with all relevant stakeholders
- Identifying trainers for these courses with different professional backgrounds and competences.
- Developing course materials
- Implementing pilots
- Evaluating and revising courses
- Implementing definitive courses
- Expanding courses (geographical/contents)

Possibilities for Dutch cooperation

Dutch organizations can collaborate with the establishment of such training centres by:

- Assisting in making a business plan for such a training centre that will need both public and private funding.

- Collaboration in the development of the course programmes together with all relevant actors. This can start with the elaboration of competency profiles for advisors, based upon a labour market study.
- Train the trainers courses, both on didactics for adult education (this required other training approaches than for students) and on technical, economical, administrative topics or others.

Training centre or unit for farmers

All actors, especially those who are buying fruits and vegetables from growers, are interested in direct efforts to train farmers, in order to improve the quality of the horticultural produce that is offered. The setting up of a training centre or unit for farmers would require the same approach and strategy as one for the advisors. This farmers training centre aims at reaching small and medium scale farmers with a commercial orientation in horticulture and those organised in producer organizations. The ultimate aim is to assisting them in developing market oriented and financially sound farms.

Advisors and other resource persons with practical knowledge on different subject matters would be the trainers in these centres. The trainings should be organized at convenient times for the farmers, i.e. out of season and in the afternoon or in the evening. They could also try to organise farmers in study clubs, etc.

Dutch cooperation could again focus on the development of the business plan of such a training centre, training needs analysis and curriculum development, training of trainers and organising study tours to the Netherlands to study farmer study clubs and training centres.

Setting up an information broker centre or front office for agricultural advisors and farmers

Professional advisors are continuously up-dating their knowledge via specialist magazines, internet, attending relevant seminars and workshops, and using the information provided by agro supply companies during sales visits, demonstration days etc. If necessary they contact experts of companies and research institutes for specific questions. It could be very helpful for them to create a centre or a front-office that aims at supporting advisors to update their knowledge in a more structural way. Private advisors (both dependent and independent), public extension workers, agricultural engineers in producer organisations, and (young) graduates could benefit from these information centres. Most important actions to be undertaken would consist of

- collecting and making available relevant information on horticulture;
- developing a website/resource portal;
- providing references of knowledgeable resource persons;
- organizing short seminars and short courses.

In this type of projects the Dutch contribution could be limited to making the business plan and identifying the organizational set-up, to organizing exchange visits to the Netherlands and to training the management and intermediate organisations if necessary. The Netherlands can also play an assisting role in organising short seminars.

6.3.2 Collaboration of Dutch and Turkish agricultural high schools and universities.

Respondents also see good opportunities for (strengthening) collaboration between Turkish and Dutch education institutions, in order to improve education at both the agricultural vocational high schools and the university level. As of February 2006, 13 agricultural vocational high schools were transferred from the Ministry of Agriculture to the Ministry of Education. The curricula of these high schools are currently being reviewed with the support of the EU-Turkey SVET programme. Dutch expertise in the field of curriculum development and train-the-teacher courses is mentioned as an interesting point for collaboration. Other important possibilities for collaboration consist of the establishment of twinning relations with vocational schools in NL, reinforce the life-long education concept and organise scholarships and fellowships (Erasmus and Leonardo da Vinci).

Apart from the same above mentioned topics for collaboration with the agricultural vocational schools, collaboration at university level can offer possibilities for the establishment of joint research programmes.

6.3.3 Concerted actions of stakeholders in the horticultural supply chain in Antalya

Currently many seminars are being organized in Turkey in order to inform stakeholders on particular subjects or relevant topics. In Antalya such seminars have for instance focussed on Producer Unions or other topics. Rather than organising workshop or seminars to inform stakeholders in the horticultural sector in Antalya, a series of workshops or events can be organised in order to improve the communication amongst actors in the supply chain and to initiate joint actions for improved performance of the supply chain.

This type of projects aims at improving the supply chain performance. Dialogue and joint learning are the basic concepts rather than transferring information by means of training and courses. This project concept also underlines the necessity of harmonisation of the introduction of new technologies in the horticultural supply chain. Food safety and quality, environmentally sound production technologies in line with the Acquis Communautaire of the EU and other export regulations can only be improved if all actors in the supply chain are collaborating on the basis of the same type of information and in a concerted action. Those actors in the pluralistic advisory system, in the research system and the policy makers do need Agricultural advisors, researchers and policy makers need to collaborate with those actors in the supply chain in order to provide the supply chain with relevant and up to date information, to formulate and implement relevant research programmes and to create an enabling policy environment for improved supply chains.

The idea is to organise a series of workshops, meetings and fairs to update actors in the sector with relevant information and innovations. In these events all actors involved in the horticultural supply chain should be involved and they should lead to joint action plans aimed at increased performance of the supply chain.

Dutch actors could play an important role in the preparation and facilitation of such a process, bring in external resources for training or information required and organise horticultural events where both Dutch and Turkish actors meet to exchange knowledge on modern technologies and inputs for the horticultural sector and to improve business relations.

ABBREVIATIONS

CDA	County Directorate of Agriculture
EU	European Union
EUREPGAP	European Good Agricultural Practices
IPM	Integrated Pest Management
MARA	Ministry of Agriculture and Rural Affairs
NGO	Non Governmental Organisation
NMS	New Member States
PDA	Provincial Directorate of Agriculture
RRA	Rapid Rural Appraisal
T&V methodology	Training and Visit Methodology
WB	World Bank
ToT model	Transfer of Technology Model

REFERENCES

- Burrell A.M. and A.J. Oskam, Turkey in the European Union. Implications for Agriculture, Food and Structural Policy, CABI Publication. 2005
- Orhan Ozcatalbas, Robin G. Brumfield and Burhan Ozkan, The Agricultural Information System for Farmers in Turkey, University of Akdeniz, Faculty of Agriculture, Department of Agricultural Economics, Antalya, Turkey, 2002
- NN, Research and development project on greenhouse cultivation, Antalya chamber of commerce and industry, Antalya 2006
- Güney O, D. Öztürk and O. Biçer, The present situation of extension service organization in Turkey, CIHEAM - Options Méditerranéennes, 1996
- Kumuk T and L. Van Crowder Harmonizing T&V Extension: Some Experiences from Turkey, Agricultural Extension and Education Service (SDRE), FAO Research, Extension and Training Division, 1996
- Ozcatalbas Orhan, Burhan Ozkan and Cengiz Sayin, Analysis of knowledge level of growers and extension services in greenhouse production in Turkey, University of Akdeniz, Faculty of Agriculture, Department of Agricultural Economics, Antalya, Turkey, 2002
- Gezici Ferhan and Geoffrey J.D.Hewings, Analysis of Regional Inequalities in Turkey, 43rd Congress of European Regional Science, 27-30 August, 2003, Jyväskylä, Finland
- Agricultural research in Turkey: Current Status and Prospects for Adaptation Period to EU Acquis, Screening report for EU accession, 2005
- Karagöz, Dr.Alptekin, Country Pasture/Forage Resource Profiles Turkey; FAO, 2000

ANNEX 1 LIST OF INTERVIEWED PERSONS

Date	Persons interviewed
2-10	Nurullah Ozcan (President Advisor) Alparslan Basarik (EU deputy expert) Union of Turkish Chambers of Agriculture
2-10	Prof. Dr. Cemal Taluğ, Dean Faculty of Agriculture, Ankara University
2-10	Mr. Kenan Yalvaç Head of the Seed and Horticultural Production Department Ministry of Agriculture and Rural Affairs General Directorate of Agricultural Production and Development.
2-10	Carla Konsten Agricultural counsellor Office for Agriculture, Nature and Food Quality, Royal Netherlands Embassy
2-10	Marcel Kurpershoek Ambassador of the Royal Netherlands Embassy Iftar dinner meeting with various stakeholders
3-10	Mustapha Oktay & M. Pina Kavas Member of Board of Directors, AB Akademy
3-10	D. Murat Aktas General Director Turkish Agricultural Credit Cooperatives
3-10	Kai Bauer, Koray Kisagüner & Nermin Kahraman Agriculture, Rural Development and Fisheries Delegation of European Commission in Ankara
3-10	Mr. Muharrem Dilbirligi Head of Foreign Affairs and EU Relations – MARA
3-10	Habib Cadirci Head of department of Farmers Extension Service, DG Support services TEDGEM
4-10	Prof. Dr. Ibrahim Uzun Dean of University of Akdeniz, Faculty of Agriculture
4-10	Workshop on demand articulation at Faculty of Agriculture Attended by 66 persons
4-10	Meeting with staff of Economic Department and Dean of Agricultural Faculty
5-10	Bedrullah Ercin Director of Provincial Directorate of Agriculture
5-10	Savas Titiz (honorary consul of the Netherlands) Director Antalya Tarim/Representative of De Ruijter Seeds Hasan Sirim (managing partner)
5-10	Ibrahim Akbulut Private advisor in Antalya Chairman of private agricultural advisors' association: Antalya Tarim Ussu
5-10	Dr Suat Yilmiaz Director of Horticultural research institute BATEM
5-10	Halil Ordu, President Provincial Agricultural Chambre Vice-secretary of producer union of Antalya
5-10	Johan van den Berg Consultant Montista BV. Advisor and trainer of extension workers under umbrella of DPA
6-10	Extension workers of DPA All Ulul Buyuksoy - Director of department of extension DPA
6-10	Mrs Esra Kösedag R&D + manager PR of Antalya exporters union
6-10	Dr. Dr. (h.c) Hasan Unal Director of Grow Fide, Director of RITO, Partner of Rijk Zwaan
6-10	Concluding meeting with staff of Economic Department and Dean of Agricultural Faculty
6-10	Huseyin Kara Director Antalya Wholesale Market

