NEAR EAST AND NORTH AFRICA DIVISION

Egypt: Smallholder contract farming for high-value and organic agricultural exports

Enabling poor rural people to overcome poverty

IFAD

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Near East and North Africa Division
Programme management department

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Currency equivalents

Currency Unit	=	Egyptian Pound (EGP)
US$ 1.00	=	EGP 5.5
EGP 1.00	=	US$ 0.181

Weights and measures

1 kilogram (kg)	=	2.204 pounds (lb)
1 000 kg	=	1 metric ton (t)
1 kilometre (km)	=	0.62 miles (mi)
1 metre (m)	=	1.09 yards (yd)
1 square metre (m^2)	=	10.76 square feet (ft^2)
1 acre (ac)	=	0.405 hectares
1 hectare (ha)	=	2.47 acres
1 feddan (fd)	=	0.42 hectares
1 hectare (ha)	=	2.38 feddan

Abbreviations and acronyms

CDA	Community development association
CEOSS	Coptic Evangelical Organization for Social Services
EU	European Union
FTC	Farmer with trader credit
HACCP	Hazard Analysis and Critical Control Point
OLIC	Smallholder with own land and institutional credit
SEDO	Small Enterprise Development Organization
SME	Small and medium-sized enterprise
USAID	United States Agency for International Development

Executive summary

Background

The total population of Egypt has grown rapidly over the last 25 years, to more than 70 million, but the annual rate of population growth has slowed to a moderate 2.1 per cent. As a result of structural reforms in the 1990s, the Egyptian economy experienced a period of sustained growth between 1994 and 2006, with a short spell of recession in 2003; however, this was reversed after the arrival of the new reformist government in the summer of 2004. The economy has improved considerably since.

Trade in high-value products, such as fruits and vegetables, is increasingly displacing exports of traditional commodities. Thus, during the 1990s, the aggregate value of world trade in traditional agricultural commodities declined, while the value of trade in high-value exports grew by around 6.8 per cent annually (approximately 4.8 per cent growth in volume and 2 per cent growth in unit prices). The trends for Egypt were similar. Export volumes and values were falling in traditional crops, and unit prices were stagnating. Meanwhile, the annual export value of high-value products was increasing by 6.6 per cent (a 5.5 per cent increase in volume and a 1.1 per cent increase in unit prices).

The predominately large Egyptian commercial farmers have benefited from the development in exports of high-value products. There is a growing consensus that, if smallholders become involved in the production of high-value crops for export, this would be the most effective way of stimulating the rural non-agricultural economy towards positive growth. This study therefore explores the potential of involving smallholders in the production of non-traditional high-value horticultural crops for export, within the thematic context of contract farming, with the aim of improving the return to smallholders on production for the domestic market.

Findings

The study finds that contract farming could be an effective way of including smallholders in the effort to supply the horticultural export value chain, particularly if farmers are organized into farmer associations. The study reveals that smallholder families could increase their incomes by as much as 63 per cent if they engage in the contract farming of organic horticultural produce, and by 43 per cent if they engage in conventional export crops.

It is estimated that if farmers would organize into farmer associations they could improve their incomes by curtailing the number of traders and selling their own production in village, governorate, and metropolitan wholesale markets, improving their household incomes by 7, 15 and 22 per cent, respectively, in these markets.

Economic impact. The marginal propensity to consume in villages by smallholders has been estimated at around 64 per cent. This provides an economic multiplier of 2.8, meaning that, for every additional Egyptian pound (EGP) earned by a smallholder, an additional EGP 2.8 would be generated in the local economy. This would drive economic growth in the agricultural sector. Equally important, it would fuel non-agricultural small and medium-sized enterprises in villages, which would generate needed job opportunities. If smallholders produce the crops most suitable for them, this could generate an annual recurrent return (see table below).

Economic Impact of Smallholder Involvement in the Production of High-Value Export Crops

Production method	Annual incremental feddan needed for export	Smallholders		Direct employment creation equivalent, annual full time jobs	Village-level economic multiplier, EGP million
		Number benefiting	Total household return, EGP million		
Conventional	12 700	21 910	49	1 345	150
Organic	2 800	5 000	19	90	60
Total	15 500	26 910	68	1 435	210

Conclusion and recommendation. To provide an enabling environment for contract farming and improve the competitiveness, handling and transport of the increasing volume of horticultural produce for export, the study finds that the following recommendations would be helpful:

- **Policy issues**

  Contract enforcement. New institutional arrangements should be developed that are able to enforce disputes between farmer associations and exporters. Such institutions would contribute significantly to the rapid development of contract farming and the establishment of farmer associations.

  Land tenure. Currently, land-rental charges mirror the value of the crops being produced, thus exploiting those farmers taking additional risks in producing high-value crops. This is particularly harmful to landless smallholders, who frequently do not have income-generating alternatives to their rented land. To protect tenants, particularly landless smallholders, a land-rental system should be developed that is based on the productivity of the land rather than on the effort and risks taken by tenants in growing high-value crops.

  Air cargo-handling. The framework for horticultural cargo-handling at Cairo International Airport has reached its limit in export volume. Moreover, stakeholders believe that air freight is 30-50 per cent more expensive there than at airports in competing countries. Only one company is licensed to handle horticultural produce. This is believed to be the main cause of the relatively high freight costs. Another limiting factor is the restriction on the hiring of cargo planes directly by exporters. To improve handling and address the growing volume of air cargo freight, the Government should allow competition among cargo-handlers and allow exporters to hire cargo planes directly.

  Investment incentive system. To reduce the enormous post-harvest losses in horticultural produce, which amount to the equivalent of 11 per cent of Egypt's total plant production, the Government of Egypt should develop a tax-incentive package that encourages businesses to invest in cold-chains for horticultural produce.

  Government involvement in professional associations. The Government's support for the Union of Producers and Exporters of Horticultural Crops is viewed as a conflict of interest because the union is perceived as a government apex institution for all private horticulture professional associations, as well as for farmers, processors and exporters. This places a damper on the activities of purely membership-based associations. The Government should either make the union part of the Ministry of Agriculture and Land Reclamation or provide purely hands-off support that cannot be misconstrued as a means of controlling professional associations.

- **Civil society**

  Farmer associations. Community development associations or farmer associations appear to be good starting points for contract farming. However, it is recommended that development efforts should assist smallholders – after they have gained the initial experience of working as a group – in forming independent, registered farmer associations and cooperatives specialized in horticultural crops. This would ease the logistical problem of GlobalGAP auditing and organic certification and make it easier to integrate farmer associations vertically with exporters and for farmer associations to obtain credit.

  Professional associations. The Government should establish a competitive grant scheme open to professional associations and their members. The scheme would support export-promotion activities that would widen exports. Exports are now narrowly concentrated on only a few countries in the European Union.

  Research and development. The Government should establish a competitive grant to support public-private research partnerships for the development of new varieties and new post-harvest techniques and testing, and to modify and adapt small drip-fertigation systems able to cater for horticultural crops and other crops on plots of 1/2 to 1 feddan.

- **Investments**

  Seaport upgrading. If the port of Alexandria is to keep up with the increased refrigerated sea-container freight, it needs to be upgraded. With the expected increase in production and exports of horticultural produce from Upper Egypt, it will become attractive to use the Red Sea ports; however, if this is to happen, the capacity of the ports in handling refrigerated sea-containers also needs to be upgraded.

  Smallholders. Development efforts in providing financial services for smallholders should include the financing of:

  – production inputs;
  – row and high tunnels;
  – drip-irrigation equipment suitable for a smallholder;
  – field packaging–charcoal cold-storage sheds, and
  – pre-cooling and refrigerated transport for larger farmer associations and cooperatives.

  Small and medium-sized enterprises. Development efforts to provide financial services for small and medium-sized enterprises should focus particularly on start-ups and the expansion of small and medium-sized enterprises situated in rural areas for investments such as:

  – refrigerated cold-chains;
  – processing facilities;
  – facilities producing packaging materials;
  – professional nurseries; and
  – business development services.

  Organic farming. Organic farming has huge potential, but the development of the subsector would benefit if exporters and processing facilities were situated closer to smallholders to ensure that technical issues are addressed and that produce without an export market is sold to supermarkets and the tourist industry.

Introduction and study objective

This report explores the potential for involving smallholders in the production of non-traditional high-value horticultural crops for export within the thematic context of contract farming. It is based on the visit of the study team to Upper Egypt and Lower Egypt, which included meetings with farmers, farmer associations, exporters, processors, Ministry of Agriculture and Land Reclamation extension personnel, and researchers.[1] The team also met with wholesalers and retailers of inputs, as well as traders, wholesalers, purveyors and retailers of horticultural produce. Meetings were likewise held with the World Bank, the German Agency for Technical Cooperation, the Horticultural Export Improvement Association, the Egyptian Spices and Herbs Export Development Association, the Union of Producers and Exporters of Horticultural Crops, the Egyptian Centre of Organic Agriculture and officials at the Ministry of Agriculture and Land Reclamation.

Study rationale

Contract farming has become an increasingly popular means for the supply of agricultural products in many developing countries, particularly where missing markets or imperfect markets (e.g. credit, market information, technical production knowledge) do not permit a reliable supply of produce in quantity or quality.

The requirement of standard compliance, particularly for exports to Europe, has also played a role in the expansion of contract farming and will continue to do so. Many European importers have begun to exclude smallholders who supply exporters independently because of the logistical difficulty in administering GlobalGAP auditing among thousands of small producers who are geographically dispersed over large areas. However, if the smallholders are vertically integrated with exporters, many supermarkets will accept the participation of the smallholders. Experience in Kenya shows that smallholders will be accepted if they are organized into farmer associations that function as individual production units and that are GlobalGAP certified.

Contract farming is an organizational arrangement that allows exporters and processors to participate in and exert some contractual control over the production process without owning or operating farms. Cultivation is carried out by individual independent growers who enter into contracts with buyers or by farmer associations that enter into joint and mutual liability contracts with exporters. Following Minot (1986), classification contracts may be divided into three categories, which are not mutually exclusive:

- market-specification;
- resource providing; and
- production management.

Market specification contracts are pre-harvest agreements that bind the buyer and grower to a particular set of conditions governing the sale of the crop. These conditions often specify price, quality and timing. Resource-providing contracts oblige the buyer to supply crop inputs, extension

1/ The study team consisted of Mr Jens E. Kristensen, Consultant, IFAD (agribusiness and marketing); Mr Said Hussein, Coordinator for IFAD's Upper Egypt Rural Development Project; and Dr Mohamed El-Eraky, IFAD Field Presence Officer.

or credit in exchange for a marketing agreement. Production management contracts bind the farmer to follow a particular production method or input regimen, usually in exchange for a marketing agreement or resource provision. In various combinations, these contracts permit exporters to influence production technology and respond to missing or incomplete markets without having to operate or expand their own production.

Study objectives. The overall objective is to find ways to reduce poverty among smallholders, thereby stimulating wider economic growth among small and medium-sized enterprises (SMEs). In turn, these would create jobs in the rural non-agricultural sector, which comprises 64 per cent of the population. This would be achieved by:

- examining the potential for the participation of smallholders in the production of non-traditional and organic horticultural produce for export;
- examining mechanisms to achieve a more equitable share of the value of the horticultural produce for the domestic market;
- estimating the economic impact on smallholders who participate in the export of non-traditional high-value crops, including organically produced crops, and on smallholders who have obtained more equitable shares of the horticultural produce supplied to the domestic market; and
- developing recommendations on the way forward.

Background

Country Economic Background

The total population of Egypt has grown rapidly over the last 25 years, to more than 70 million, but the annual rate of population growth has slowed to a moderate 2.1 per cent.[2] During the 1990s, the Egyptian economy experienced sustained growth in response to economic reforms and the implementation of a comprehensive structural adjustment programme. The reform programmes also instigated fundamental changes in what had been the dominant role of the public sector. The shift was from central control to a system in which privatization and the liberalization of trade and investment policies freed the economy and provided the stimulus for improvements. As a result, gross domestic product per capita rose from US$720 to US$1,390 between 1994 and 2002. In 2003, the economic growth began to recede.

However, this was reversed with the arrival of the new reformist government in the summer of 2004. The economy has improved considerably since. The reformers have successfully floated the Egyptian pound (EGP), eliminated the foreign-exchange shortages and the black market, reduced tariffs and simplified the tariff structure by cutting the number of rates and categories, moved to reform the financial sector, introduced measures in Parliament to simplify the tax structure and lower tax rates, and reduced the amount of red tape necessary to conduct business. The economy is now growing at a rate of 6 per cent per year, and the new measures have inspired a wave of enthusiasm in the business community.

However, the main development challenge remains unchanged. Apart from the need continuously to expand services in response to population growth, there is a need to generate employment for the approximately 600,000 entrants to the job market each year. Job creation, which is considered the driving force in expanding the economy, is now clearly seen as a role of the private sector.

Another challenge is to reduce poverty. Overall, the number of poor in Egypt is about 10.7 million. Of these, 29 per cent are urban poor, and 71 per cent are rural poor. However, the sharpest distinction in poverty rates is now between Egypt's metropolitan areas, Lower Egypt and the border areas, on the one hand, and Upper Egypt on the other (annex 2). Upper Egypt is where most of the poor are now located. The extent of unemployment and underemployment can be gauged from the estimate that only 46 per cent of the working age population participates in the labour force; among those people who are employed, 40 per cent earn a living in microenterprises and small enterprises that operate in the informal sector.[3] While unemployment exists across all educational categories and age groups, most of the unemployed are young, educated people.

Agricultural Sector

Although the contribution of agriculture has fallen, it still accounts for about 17 per cent of gross domestic product and 20 per cent of total exports and foreign-exchange earnings. In addition, industries related to agriculture, such as processing, marketing and input supplies, account for another 20 per cent of gross domestic product. Agriculture is therefore a key sector in the Egyptian economy, providing livelihoods for 55 per cent of the population and directly employing about

2/ See annex 1 for summary country data drawn from the World Bank database for April 2005.

3/ Source: UNDP Country Evaluation Egypt, 2004.

30 per cent of the labour force.[4] Almost all farms are small (an average of about 2 feddan; 95 per cent of farms are less than 5 feddan each). In several cereal crops (e.g. rice, sugar cane and sorghum), the yields in the old lands are among the highest in the world.[5] However, this system only covers about 3 per cent of the land area, and Egypt still has to import about 40 per cent of its food requirements.

Agriculture is the largest user of water in Egypt, accounting for 83 per cent of the total use, compared with 6.5 and 10.5 per cent for municipal and industrial uses, respectively. The growing population of Egypt and the related industrial and agricultural activities have increased the demand for water to a level that reaches the limits of the available supply.

Yearly cropping intensity is around 200 per cent. The crops cultivated in one year thus cover more than 14 million feddan. The share of horticultural crops is 13.8 per cent of the total land under cultivation, but represents 36 per cent of the value of all crops produced.

Horticulture Sector Context

Public institutions

Agricultural research and development. Planning in agricultural research is dominated by a top-down approach, although it has begun to be decentralized; there is little participation by farmers. The main research focus is on the same crops produced during the period of central planning (wheat, cotton, maize and sugarcane). The results in terms of higher yields have been notable. However, since the end of central planning, there has been a shift to a more export-oriented production system involving high-value crops. This requires knowledge of cultivars, varieties, pre- and post-harvest technology, market information and economic analysis regarding the returns to various investments. Unfortunately this information is not readily available, particularly among smallholders. The research institutions are only in their infancy in addressing these issues.

One positive development is the research on farming systems recently conducted, in conjunction with smallholder farmers, through the Agricultural Production Intensification Project (APIP). The aim of the project is to test and develop recommendations for intercropping and relay cropping in order to provide additional windows for the inclusion of high-value crops as an add-on to the income generated through existing cropping patterns. Similarly, recommendations were also developed through the project for the improvement of low-cost livestock that would provide substantial gains to smallholders. Specific horticultural crops, including strawberries, grapes, green beans and cantaloupe have received special attention through the support of the United States Agency for International Development (USAID).

Agricultural extension. During the period of central planning, agricultural extension services were efficient in transferring the latest research findings to farmers. However, a restructuring process in extension services has only recently been undertaken with the aim of responding to the demand for specific advisory services related to non-traditional high-value crops. The field observations gathered during the study mission show clearly that public extension services would take a considerable amount of time to be sufficiently responsive to provide the advisory services needed in the horticulture sector. However, some examples show that the system is capable of delivering results if the work is carried out in conjunction with large farms, private companies, or development agencies and, particularly, smallholders organized into farmer associations.

4/ Ministry of Agriculture and Land Reclamation, The Strategy for Agricultural Development in Egypt until the Year 2017, May 2003.

5/ The old lands are found in the Nile Valley and the Delta and include areas that were reclaimed from desert many generations ago and have been irrigated and intensively cultivated ever since. Old lands tend to be deep, flat and fertile. The new lands are areas that have been reclaimed from the desert relatively recently or are in the process of being reclaimed now. New lands are initially not fertile, but, over time, with good soil and water management techniques (especially the incorporation of compost and crop residues), their productivity improves and, in successful areas, eventually approaches that in the old lands.

Agricultural trade agreements

Egypt is party to various free trade and partnership agreements, and the Government intends to take maximum advantage of these opportunities. The key agreements include the Euro-Mediterranean Association Agreement with the European Union (EU) and the Agadir Declaration, which established a free trade area among Egypt, Jordan, Morocco and Tunisia. Egypt is also a member of the Common Market for Eastern and Southern Africa and the Greater Arab Free Trade Area and has bilateral trade agreements with Tunisia and Turkey. The Government has recently entered into a qualifying industrial zones agreement that will allow exports of certain products, especially textiles, to the United States market free of tariffs and quota restraints.

Credit

The Social Fund for Development. The Social Fund for Development is an autonomous government institution. It has two main departments dealing with SME development and microfinance: (i) the Small Enterprise Development Organization (SEDO) is a one-stop shop for the licensing and registration of SMEs. SEDO also provides integrated financial and non-financial services to SMEs through banks; (ii) the Microfinance Sector provides loans to microenterprises through non-governmental organizations and village-based community development associations (CDAs). The Social Fund has regional offices in all the governorates. A multidonor review in November 2004 concluded that the Social Fund was efficient and that its continuation is highly relevant.

SEDO, a subsidiary of the Social Fund, is the apex organization for the development of the small enterprise sector. In this capacity, SEDO provides support to enterprise development service providers to:

- improve their capacity in delivering services to end-borrowers,
- promote self-employment among youth by encouraging educational and training institutions to include entrepreneurship courses in their curricula, and
- provide business development services to small enterprises and financial links with collaborating banks. (The Principal Bank for Development and Agricultural Credit is dominant in this field; other banks are the Bank of Alexandria, the National Bank of Egypt and Misr International Bank.)

SEDO provides financing to banks for loans to small enterprises. Currently, the annual plan of SEDO is to create 110,000 employment opportunities and disburse EGP 1.5 billion to 30,000 new and existing small enterprises. The average loan size would be EGP 35,000 per enterprise. In addition, SEDO is finalizing new business support services including clusters, client networking, branding, franchises, product integration and marketing consortia. SEDO is also developing the new financial products such as bill-discounting, technology development funds and venture capital funds.

The most important bank in the agricultural sector is the Principal Bank for Development and Agricultural Credit, an autonomous government institution. The bank has the mandate of supporting rural development and agriculture by combining social and commercial objectives. The bank accounts for about 80 per cent of available rural credit; the remaining 20 per cent is provided mainly by commercial banks and a few microfinance institutions and non-governmental organizations. The bank has a network of over 1,200 outlets, comprising 18 governorate branches, 176 district branches and 1,018 village banks. The bank's main target population is farmers who possess land titles as collateral or personal guarantees as a collateral substitute.

Public-private partnership in research and development

In the horticulture sector, public-private partnerships are appearing in research and development among universities, research institutes and private companies. These are addressing issues such as the pre-harvest handling of onions, irrigation techniques to reduce salinity, pruning fruit trees, the

development or adoption of new varieties, and post-harvest handling. At first, these initiatives involved international development agencies, but, as professional organizations within the horticulture sector have become stronger, many initiatives are being undertaken by them or directly by exporters. Some companies involved in supplying the pharmaceutical industry have their own research departments (e.g. the Sekem Group and Agrofood Egypt).

Private-sector service providers

Horticultural crop production advisory services. Professional horticulture associations sell advisory services using their own staff or through outsourcing to selected professionals. The services are highly specialized professional-quality services, and the cost appears to be of little relevance compared with the return. Farmer associations contracted to grow horticultural produce for an exporter also make use of these services through the exporter, though they pay for the services. An increasing number of private advisers are also offering services.

Organic certification. The Egyptian Centre of Organic Agriculture is accredited to certification bodies in Europe and the United States. In addition to organic certification, it also provides GlobalGAP, Hazard Analysis and Critical Control Point (HACCP) and International Organization for Standardization certifications.

Business service providers. There are many business associations for women and men throughout the country that provide business development services for their members. The number of associations selling such services is rapidly increasing; the quality varies, but there are many well-qualified associations available.

Professional civil society associations

A number of professional associations have developed over the past decade. They are steadily improving their performance both in providing direct services to members (technical training, GlobalGAP training, management training, organic certifications, and HACCP and International Organization for Standardization 9000 and 22000) and in lobbying for better conditions. Among other results are the following: (i) the cold-storage platform at Cairo airport and at Luxor (Luxor airport is under construction); (ii) changes in the regulations on imports of planting materials to allow for the use of imported planting materials in the production of export crops, thereby reducing the time needed from two years to two weeks; and (iii) removal of the import tax on second-hand refrigerated trucks. The most important professional associations are described below.

Horticultural Export Improvement Association. The objective of the Horticultural Export Improvement Association is to improve the capacity of Egyptian exporters to export high-quality horticultural products. Members handle the vast majority of fresh fruit and vegetable exports. The association is composed of more than 150 large growers and exporters of fresh horticultural products and is currently expanding into processed food. Members also include input suppliers, suppliers of packaging materials, transporters, freight-forwarding companies, and cold-storage facility providers. It has a quality control unit that offers direct technical assistance to member growers and shippers, but also sells its services to non-member producers who wish to sell to members.

The association has an active policy advocacy committee. Its newsletter highlights policy constraints, and, because several members also belong to Arab Communication Consult, policy issues are brought to the attention of the Minister of Foreign Trade during regularly scheduled monthly meetings. One noteworthy example of advocacy has involved the association's efforts to establish the perishables cold-storage terminal at Cairo airport. The association has organized the commodity councils on table grapes, strawberries, melons, mangoes, green beans, cut flowers, nurseries, organic agriculture, and food processing. It also provides technical assistance to members and non-members.

Union of Producers and Exporters of Horticultural Crops. The union's objectives are to:

- develop the cultivation of horticultural crops in a scientific manner;
- increase the area under horticulture production; and
- develop and increase Egypt's exports of horticultural crops.

The union also provides marketing and technical services to its members.

CropLife Egypt. CropLife Egypt consists of importers and distributors of pesticides and agrochemicals. The objective is to achieve a transparent and fair system of pesticide registration and import licensing. The association is active in advocating for policy change. The product testing that a proper registration system requires is critical for maintaining a supply of safe and effective pesticides for Egyptian farmers. Multinationals with large research and development budgets for new product development have a financial interest in registration that prevents the import of low-cost, unsafe and ineffective pesticides. Import licences of registered products are granted annually by the Ministry of Agriculture and Land Reclamation. CropLife members are concerned about the lack of transparency in the process, which often results in arbitrary volume allocations to members, government entities (the Egyptian Borsa and the formulators operated by the military), and the five largest Egyptian formulators.

Egyptian Association of Traders of Seeds and Agricultural Pesticides. The Egyptian Association of Traders of Seeds and Agricultural Pesticides is a small association that offers representation for the 4,000 pesticide dealers in Egypt. The association's objective is to improve the business environment for pesticide dealers. The association participates in the certification of dealers.

Egyptian Seed Association. The Egyptian Seed Association was formed in 1998 to help achieve a more integrated and efficient privately-led seed industry by representing, protecting and serving the interests of members. Members include seed companies, plant breeders, multiplication and production companies, distributors and traders. The association was in the forefront of reasonably successful efforts to facilitate, accelerate and lower the cost of vegetable seed importation and registration; guarantee the rights of plant breeders, work towards the enactment of the Seed Law of 1997, and push intellectual property rights legislation through Parliament.

Egyptian Spices and Herbs Export Development Association. The objective of the Egyptian Spices and Herbs Export Development Association is to develop the herb and spice industry in Egypt through the production and processing of spices and herbs and provide technical assistance and market information to members and growers.

Transport infrastructure

The road infrastructure has been well maintained and improved over the past 10 years. Road transportation is steadily changing from a fragmented industry composed of many small companies with smaller trucks to a consolidated industry with larger and more modern semi-permanent trailer trucks bringing the cost of transport down and making it more cost efficient to move goods. According to transporters, the tariff reforms will have a positive influence on the upgrading of the transport sector.

Air transport has also improved in recent years because of the new cold-packaging and storage facility at Cairo airport. However, the available cargo space outside the airport is presently fully utilized. An expansion in exports from Cairo airport will require significant coordination among exporters to utilize specially hired air cargo services. Apparently, there are also restrictions on

exporters hiring cargo planes. At Luxor airport, a platform similar to the one at Cairo airport is under construction and was expected to become operational during 2008.

Sea transport has also improved due to increased export volumes. This has enticed some shipping lines to make Alexandria the last port of call before European ports, reducing the time of sea transport from two weeks, when other ports outside Europe were visited after Alexandria, to three or four days.

Contract enforcement

The Egyptian judicial system functions extremely slowly, and court cases can often remain in the system for several years, making it financially impossible for smallholders to file court cases of any sort. This situation is well known to any party who does not wish to honour a contract. Therefore, written contracts between two parties often favour the economically strongest party, making smallholders hesitant to enter into contract-farming arrangements.

Tariffs

In 2005, tariffs on automotive manufacturing components were reduced from 5-12 per cent to 2-5 per cent. The improved tariff structure allowed cheaper imports of equipment and machinery for exporters, processors and transporters of horticultural produce by improving returns on investment and by increasing competitiveness.

Foreign-exchange controls

In January 2003, a more flexible exchange rate policy was implemented. Subsequently, there was a 25-30 per cent depreciation of the Egyptian pound against the dollar. By late 2004, Egypt's foreign-exchange regime had stabilized and the parallel market had disappeared. The currency has remained stable in relation to the international market, and, as of late 2006, the Central Bank of Egypt had accumulated US$24,064.91 billion in net international reserves. The adjustment of the exchange rate has had a positive impact on horticulture exports.

Development activities

The Agricultural Exports and Rural Incomes Project is a four-year US$57.3 million project funded by USAID. It was launched in the last quarter of 2003 to help tackle three key issues in Upper Egypt: high unemployment, low rural household incomes and underdeveloped agricultural export potential. The overall goal of the project is to increase on-farm and agribusiness jobs that will raise rural household incomes. Increased rural incomes will be accomplished by strengthening the competitiveness of Egypt's horticulture and livestock sectors in the global economy by expanding the access of farmers and agribusiness firms to knowledge, technology, markets, and institutions that are key ingredients for success. Five activities have been implemented in pursuit of this goal:

- a grant programme for groups of smallholder farmers in Upper Egypt;
- grants and training for agricultural trade organizations;
- support for smallholder horticulture and livestock producers;
- strengthening international links between Egypt's smallholders and international markets for their products; and
- design of a legacy programme for sustainable smallholder market development. As a part of the project, CARE Egypt is working under a grant to improve horticulture marketing in seven governorates in Upper Egypt (Aswan, Beni Suef, Fayoum, Giza, Luxor, Qena and Sohag). The goal is to enhance rural household incomes through smallholder horticulture activities. They are working with four subcontractors: University of California–Davis, the Nile Valley Group, ACDI/VOCA and Environmental Quality International.

The goal of the IFAD-funded West Noubaria Rural Development Project (WNRDP) is to enhance the livelihoods of the target population through increased and sustainable economic activity and greater social self-reliance, which would be achieved through the following objectives:

- achievement of social cohesion and a sense of community in the villages;
- reliable, equitable access to the support services that are essential for economic and social well-being;
- diversified and profitable farming based on more efficient water use;
- self-sustaining arrangements to provide accessible and effective credit services; and
- a diversified and strengthened local economy that contributes to wider national economic advancement.

Through the project, farmer associations have been established and successfully linked to Agrofood Egypt for the production of organic potatoes.

The Small and Medium-Sized Enterprise Promotion Programme for Fruit and Vegetable Processing in Egypt is a four-year US$7 million project funded by the German Agency for Technical Cooperation. It was launched in early 2006 to assist processers in upgrading their production methods and applying international standards, including HACCP and International Organization for Standardization 22000, thereby enabling better penetration for Egyptian processed foods on the international market. The programme has provided assistance to processors of olive oil, herbs and spices, pickles and frozen produce. The project supplements the activities of the USAID Agricultural Exports and Rural Incomes Project and the IFAD Upper Egypt Rural Development Project.

The USAID Microfinance Support Project. Over the past decade, USAID has become the largest supporter of microfinance activities in Egypt. (Its share has been estimated at 70 per cent of the total funding.) It supports microfinance programmes at seven microfinance institutions throughout Egypt, as well as programmes with the National Bank for Development. USAID's support is based on the provision of refinancing facilities for lenders and concentrated technical assistance. Loans are provided to owner-operated enterprises employing up to 5 people (microenterprises) or 6-15 people (medium-sized enterprises). Loan sizes range from EGP 500 to EGP 5,000 for microenterprises and EGP 5,000 to EGP 25,000 for the other enterprises, with maturities of 4-12 months for working capital loans and up to 24 months for capital expenditure. Interest is charged at commercial rates, and the operating costs of microfinance institutions are taken into account.

The programme has also encouraged the development and application of group lending methodologies focused on women. As of August 2005, these programmes had reached 450,000 active borrowers. Of these institutions, though, only one operates in the project's target area, and it focuses mainly on the urban area of Assiut City.

The Financial Investment and Sector Cooperation Programme–Rural Component is a development project of the Ministry of Agriculture and Land Reclamation funded by the European Union (EU). It was designed to provide loan facilities for the development of private-sector SMEs, medium-scale private-sector farms and rural enterprises. The project is funded under EuropeAid's MEDA programme. The total funding available is €18 million, of which €16 million is allocated for a line of credit. Implementation of the four-year project commenced in 2005. The project's overall objectives are to increase income and job opportunities in rural areas and to increase food production for local and export markets through the provision of financial and institutional support.

This support will be provided to farmers, agricultural entrepreneurs and their respective intermediary organizations that are involved in post-harvest operations, input supply, or marketing activities. The project's €16 million credit line would be managed by an agent bank that would

work with a number of participating commercial banks. The project would also provide training and capacity-building to participating banks to improve their attitudes towards agricultural and rural SME lending, thereby creating better access to credit facilities among the primary target group. The Commercial International Bank has been selected as the agent bank of the project.

The Italian-Egyptian Debt for Development Swap–Green Corridor Pilot Project supports various marketing-related activities. Among other initiatives, it is developing a business plan for the establishment of a green corridor to Europe. The business plan is looking at the feasibility of establishing a regular shipping route between Egypt and Italy, mainly for the transportation of horticultural produce.

However, to make the route viable, other industries, such as the garment and stone industries, have been asked whether they are interested in using cargo space seasonally when the shipping requirements are reduced in the horticulture sector. The industries have affirmed their interest in using the free cargo space. The last obstacle in making the shipping route operational is the acceptance by the Government of Egypt of the responsibility for providing a payment guarantee for the cost of hiring the shipping line to cover any shortfall in expected earnings. It is hoped that the shipping line will begin operations during 2008. According to the project, the green corridor has encouraged a large Italian cooperation initiative to implement a horticulture cold chain in Egypt that includes two complete cold facilities – one each in Upper Egypt and in the metropolitan area – and a fleet of 18 refrigerated trucks.

Upcoming activities

The overall objective of the IFAD-supported **Upper Egypt Rural Development Project** is to contribute to poverty reduction and improved livelihoods among the target population in the project area. The intermediate objectives are to empower the project target group to obtain better access to credit, create sustained employment and increase incomes. This would be achieved through:

- microfinance and microenterprise development in order to create sustainable job opportunities; and
- enhanced capacities among SMEs to improve productivity, competitiveness and marketing.

Lessons learned through development activities

Horticulture, both traditional and organic, offers great opportunities for smallholder farmers, as well as the creation of on- and off-farm employment. The biggest return would come from horticultural products for the export market. However, this is risky for smallholder farmers if non-exportable rejects cannot be sold on the domestic market. It is therefore important to ensure that a domestic market exists for the relevant produce. The domestic market is the most important, and, if post-harvest losses can be reduced, it is also a lucrative market.

Encouraging results are emerging from efforts to use farmer associations as link mechanisms with nearby local markets, the broader domestic market and the export market. These farmer associations also offer the possibility for horizontal integration into regional and national apex associations, thereby strengthening the availability of marketing information and the bargaining position of the associations.

Investing in SME start-ups located within the rural setting and involved in the export and processing of horticultural produce would create much-needed rural employment. At the same time, experience shows that such SMEs would represent a good foundation for building strong locally based contract-farming arrangements.

It is apparent that the lack of contract enforcement keeps many farmers from participating in contract farming through farmer associations. The smallholders who have benefited from supplying the global value chains in high-value horticultural produce are those who are vertically integrated with agribusinesses or who are organized into farmer organizations for collective

strength; have access to better infrastructure and credit; and have benefited from the role played by the public sector and others in capacity-building. The issue of contract enforcement should therefore be given high priority by the Government and its international development partners.

The availability of well-designed pre-production market information for planning purposes and indicative market prices at the selling point is critical in optimizing income among the target group.

It is important not to use large capital items such as grants to facilitate the formation of farmers associations because such a method tends to attract the more well-off members of society who are interested in controlling the capital item for personal gain rather than contributing to the activities of the association. Assisting farmer associations in engaging in direct export should also be avoided and left to people who know the business. Cost recovery and cost-sharing mechanisms should be introduced from the onset in supporting farmer associations in order to pave the road to sustainability.

Providing skills training can be effective in generating employment opportunities. For example, women trained in the Euro-Retailer Produce Working Group–Good Agricultural Practices, or EurepGAP, which, since 2007, has been known as GlobalGAP, are preferred over non-skilled persons. Skills training can also be used as a targeting mechanism for women. It is also essential in fostering new microenterprises and small enterprises. As an illustration of the importance of skills training, 86 per cent of the 23,000 unemployed persons (redundant public servants and youth) trained through SEDO went on to obtain jobs.

The Egyptian processing industry can play a much more important role in the export market, particularly the European market, if it is upgraded to comply with international standards (HACCP, GlobalGAP and the International Organization for Standardization).

There is a need to increase the awareness of smallholders and microentrepreneurs about the business opportunities available to them. This would broaden the options for small-scale activities among the rural population and provide complimentary technical assistance to get business projects under way. Smallholders should also be made aware of financing sources for microloans and small loans enabling them participate in the production of high-value crops.

Market Trends

Global demand

Over the past decade, the global agrofood system has changed dramatically in several ways, including:

- the rise of global commodity chains for agricultural produce whereby suppliers in one country are linked to customers in another;
- the participation of smallholders who are linked in the global value chains through contract farming, particularly in high-value perishable commodities such as horticultural crops in, for example, Kenya and Zimbabwe;
- the shift in horticulture value chains from sole reliance on homogeneous commodities to inclusion of exotic fruits and vegetables;
- the introduction of private food safety standards (GlobalGAP);
- the growing role of import companies in coordinating the production and marketing of horticultural produce and of supermarket chains in transmitting quality, food safety and other standards from consumers to farmers; and
- the increasing interest of retailers and consumers in the characteristics of final products, the way they are produced, the working conditions of people employed in the sector and the environmental impact of horticulture production.

There are many concerns about the way to integrate poor smallholders into the global horticulture value chain, but recent studies suggest that contract farming can have rewards for smallholders (McCulloch and Ota, 2003). In the broader discussion on whether smallholders have benefited from

globalization, the winners have been those who have become vertically integrated with agribusinesses or with exporters or those who have organized into farmer associations for collective strength on the domestic market. These smallholders have obtained access to better infrastructure and credit and have benefited from the role played by the public sector and others in capacity-building.

High-value exports play an increasingly important role in Egypt. The value of horticultural crops will soon rival the value of traditional export crops; presently, the total value of horticultural crops represents 36 per cent of total crop value.

The value of fruit and vegetables on the international market increased steadily, from US$9.2 billion in 1992 to US$15.5 billion in 2001, an increase of 6.8 per cent per annum. The volume also increased, but only by 4.8 per cent per annum, from 813 million tons in 1992 to 1.2 billion tons in 2001, meaning that the unit price increased more rapidly than production. The share by volume of Egypt in the world trade for horticultural produce increased from 1.5 per cent to 1.7 per cent (an 8 per cent rise) during the period 2000 to 2004.

Traditional domestic value chain analysis

This section examines traditional domestic value chains for horticultural produce in order to identify problems and propose recommendations to improve the sector and enable smallholders to participate in the value chains in an equitable fashion and link them with export value chains.

Traditional Domestic Value Chain Analysis for Fresh Horticultural Produce

The potential of horticulture production is immense. The annual increase in domestic demand is estimated at 4 per cent, representing around 500,000 tons of fresh vegetables and 370,000 tons of fresh fruit per annum.[6] Annual domestic demand is calculated on the basis of an annual population growth rate of 2.1 per cent, a rapidly growing processing industry and the tourist industry, which is a source of growth. The consumer orientation in horticultural produce in the metropolitan area and the governorate cities is in the early stages of a shift towards responsiveness to market demand rather than supply factors. However, overall, quality is not a major issue among consumers.

An increase in demand would have to occur through a reduction in post-harvest losses (estimated at around 30 per cent), increased yields and expansion in the total area under production (around 153,660 feddan).

For the Egyptian domestic market, 37 different types of vegetable cultivars and as many types of fruits are grown. These various types of horticultural produce exhibit a similar value chain structure that involves four phases: input supply, production, trade and wholesale, and retail.

Climatic conditions and the availability of water for irrigation make it possible to grow vegetables all year round.

Table 1 Traditional domestic value chains: annual production of horticultural produce and growth trends

Market size and demand growth trend	Vegetables (tons)	Fruit (tons)
Annual production	11 100 000	8 240 000
Annual growth trend between 2000 and 2005	500 000	370 000

Source: FAOSTAT, 2005.

Figure 1 Traditional domestic value chains for fresh horticultural produce

6/ FAOSTAT, 2005.

Actors

Input supply

Inputs used in the production of vegetables are mainly supplied through the small agro-input stores that exist in nearly every village and the cooperatives located in most districts. Seed for most vegetable cultivars are available, but the choice among varieties is limited. The choice among fertilizers and pesticides is also limited and does not necessarily reflect the needs of optimum production.

Organic fertilizer is readily available in the form of compost derived from the production of smallholders or through small one-woman enterprises in almost every village.

In towns and governorate cities, larger agro-input supply companies offer a wider assortment of seeds, fertilizers and pesticides. Some of these companies also stock irrigation equipment, materials for row covers and high tunnels, tractors and related implements, and other rolling stock and equipment used in agricultural production.

Fuel and equipment repair shops are readily available throughout Egypt to meet on- and off-farm needs.

Major multinational agro-input and equipment suppliers are represented in metropolitan areas. These companies supply inputs and farm equipment to networks of wholesalers and directly to large farms producing for export. Some of these companies are also engaged in the production of seeds.

The estimated annual expenditure on seeds, fertilizers and pesticides for the production of vegetables for the domestic market is US$390 million; approximately US$450 million is spent on equipment, including the cost of fuel, operation and irrigation system maintenance.[7]

Production

Smallholder farms (1-3 feddan) produce approximately 90 per cent of all vegetables for the domestic market; medium-sized farms (3-5 feddan) produce around 7 per cent, and large farms (5 feddan or larger) account for 3 per cent of production. The vegetables supplied to the domestic market by large farms and some medium-sized farms are mainly export rejects or excess production for export.

Around 1.8 million feddan are under horticulture production. This accounts for more than 13 per cent of the total cultivated area. Horticulture is practised throughout Egypt; however, there is a regional disparity between Upper Egypt, where around 7 per cent of the total area under horticulture production is located. This compares with 43 per cent in Lower Egypt. It has been estimated that, in Lower Egypt, non-traditional crops account for 58 per cent of the net revenue of smallholders. The share is 12 per cent in Upper Egypt. This may be part of the reason why poverty is more widespread in Upper Egypt; an increase in the proportion of non-traditional crops in Upper Egypt would most likely contribute to a reduction in the level of poverty.

The activities involved in vegetable production are uniform across regions, as follows:

- Basic land preparation is carried out using tractors, and the remaining activities are carried out manually or using equipment drawn by animals.
- Seedlings are produced by smallholders or purchased through small nursery businesses. Planting and seeding are carried out manually.
- Irrigation is surface-based, mainly furrow irrigation and, to a lesser extent, border strip and basin irrigation. Although many farmers have perfected the furrow method, there is still considerable water loss due to evaporation and percolation.
- Fertilizer-use efficiency under irrigation conditions is close to optimal among the majority of farmers; most smallholders use both mineral and organic fertilizers.

7/ Ministry of Agriculture and Land Reclamation, 2005.

- Controls against plant pests and diseases are practised on most vegetable crops. This is accomplished in a balanced and environmentally responsible manner; most farmers are aware of the harmful effects of chemicals. Weeding is carried out manually, and the weeds are used as mulch or in the production of compost.
- Pre-harvest, harvest and on-farm post-harvest handling is rudimentary, and the room for improvement is considerable. Most vegetable crops are purchased on the root by traders and are harvested by traders. The pre-harvest care and curing of crops such as potatoes, onions, sweet potatoes, garlic and carrots are not common. On-farm post-harvest handling consists basically of picking the crop and placing it directly into recycled bags (nylon or gunny bags) or in crates (made of palm wood). This method is not hygienic and creates ideal conditions for microbes to thrive. The shelf life of the produce is thereby reduced.

Marketing

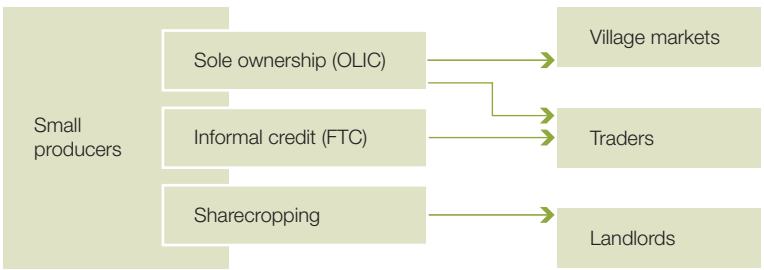
Market structure. Horticultural produce can be found in all markets throughout the country. The market structure may be divided into the geographical hierarchy shown in table 2.

Vegetables produced by smallholders are usually marketed through channels based on the type of crop ownership arrangement or the source of financing for the cost of production. The market arrangement is illustrated in figure 2.

Table 2 Domestic market structure

Geographical hierarchy	Actor
Smallholder farmers	– Farmers – Traders – Markets
Villages	– Traders, transporters – Village markets, wholesalers – Small home stalls – Street stalls
Governorate towns and cities	– Traders, transporters – Wholesale markets – Purveyors, transporters – Street stalls – Small grocery stores – Modern grocery stores – Supermarket chains
Metropolitan	– Traders, transporters – Wholesale markets – Street stalls – Purveyors, transporters – Small grocery stores – Modern grocery, convenience stores – Supermarket chains – Hypermarkets

Figure 2 Crop ownership and marketing channels



Smallholders with their own land and institutional credit (OLICs). Smallholders owning their land are able to finance crop production through their own resources or institutional credit (microfinance institutions or banks) and therefore retain ownership of the crop. This category of farmers usually sells the harvested crop to traders at the farmgate or transports it to village markets for sale to wholesalers. During harvest, the OLICs utilize available household labour before hiring additional transient farm workers. The produce is harvested straight into lattice-crates (constructed of palm wood); for tomatoes and other vegetables, gunny sacks or plastic bags are used.

Farmers with trader credit (FTCs). Smallholders who have received crop financing from traders usually must sell all or part of their crops to these traders. The traders have the upper hand in determining the crop price, and the interest rates on production loans are often in excess of 30 per cent, three times the bank rate. At the time of harvest, the traders take over the crops, and they become responsible for harvesting, often using his own farm labourers.

Sharecropping. Smallholders who sharecrop with landowners are responsible for their crop until harvest. Thereafter, the crops become the property of the landowners (who often also act as traders), who then harvest the crops for sale to traders or directly to wholesalers. The smallholders are paid agreed shares of the prices obtained for the crops by the landlords. The shares often do not amount to much more than the daily labour wage rate for a transient farm worker, which is EGP 7 per day; however, the system is not transparent, and there is wide variation.

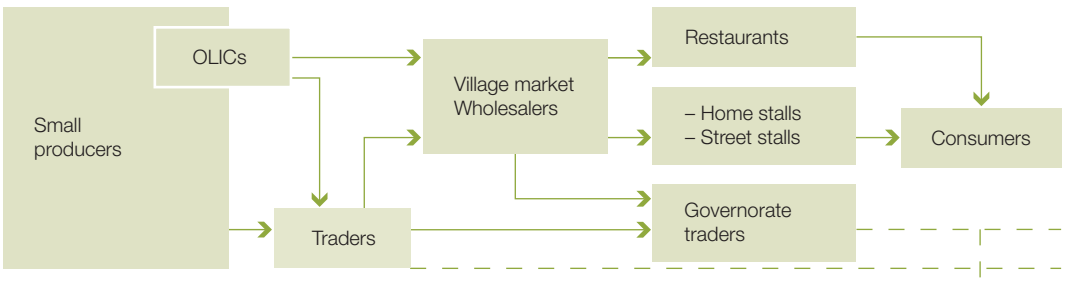
Village marketing

Figure 3 provides an overview of the marketing structure at the village level. Most horticultural produce consumed in villages passes through the village market and is then sold to retailers and governorate traders.

Traders and OLICs. Traders and the OLICs transport the produce to the village market and sell it to wholesalers, usually on the same day the harvesting takes place. Open flatbed trucks are used for transportation. The trucks typically lack covers to protection the produce from dust and sunlight. The wholesalers usually leave little room for bargaining in their prices.

Wholesalers. The wholesalers sell the produce by the kilogram to small home stalls, street stalls and small rudimentary grocery stores. The produce is sorted into two grades. The top grade is sold to retailers, and the second grade – produce near the end of its shelf life – is sold to small restaurants at reduced prices. The wholesalers do not have cold-storage facilities, and all their produce is stored in sheds.

Figure 3 Village marketing structure



Retailers. Retailers supply all the horticultural produce consumed in villages except for the produce consumed by the smallholder-producers.

- Home stalls are small enterprises operated from homes. They supply nearby neighbourhoods in urban districts. The average income of these enterprises does not exceed the daily wage for a transient farm worker, around EGP 5 to EGP 7 per day.
- Street stalls are located in busy streets and are larger than the home stalls. They are often tended by employees (who may be household members).

Governorate town and city marketing

The marketing structure at the governorate town and city levels has three additional dimensions not found at the village level: purveyors, grocery stores and small supermarkets.

Purveyors. Many purveyors buy from wholesale markets and deliver to grocery stores, supermarkets, restaurants and government institutions. Depending on the requirements of particular retail outlets, the vegetables and fruits are packed in small trays covered with cellophane or in plastic bags.

Grocery stores. Grocery stores are common in towns and governorate cities. Usually, small grocery stores stock fewer perishable vegetables such as onions, garlic and potatoes, and the bigger stores stock a wider range that also includes perishable vegetables and fruits.

Supermarkets. Small supermarkets and supermarket chains are evolving rapidly and are becoming common in large governorate cities. The supermarkets stock the full range of vegetables and fruits, and the larger chains use refrigerated gondolas to keep the produce fresh. Prices for the vegetables and fruits sold at supermarkets are often around 10 per cent less than the prices at the stalls and grocery stores.

Metropolitan marketing

In addition to the governorate marketing structure, the metropolitan structure also includes hypermarkets and a much greater density of supermarkets.

The metropolitan area includes Cairo and Alexandria and surrounding satellite cities. The combined population is around 12 million, which represents a huge market for food, including fresh horticultural produce.

Hypermarkets have succeeded in changing the way Egyptians shop, making it possible for shoppers to buy everything under one roof rather than visiting several distant small groceries and meat and vegetable stalls. The hypermarkets have also prompted local retailers to reinvent

Figure 4 Governorate town and city marketing structure

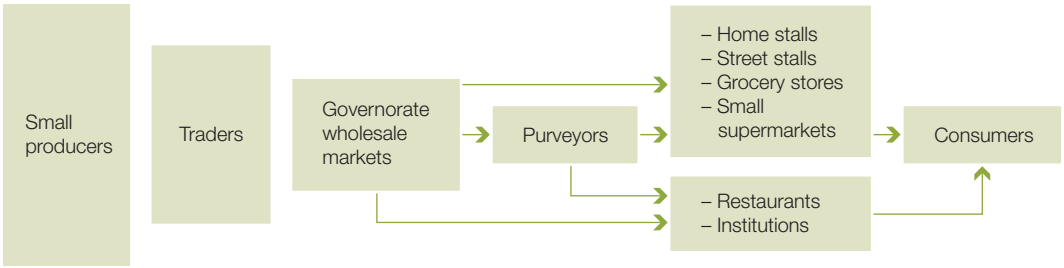


Figure 5 Metropolitan retailer marketing structure

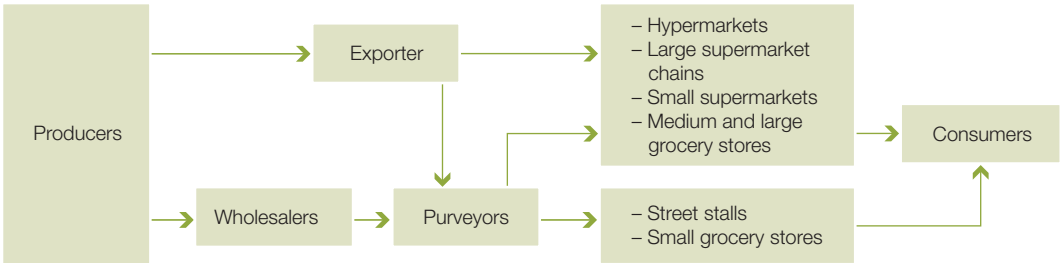


Table 3 Structure of the modern retail market

	Number of modern supermarkets						
Type of supermarket	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Hypermarkets	2	3	6	8	8	10	11
Large supermarkets	390	437	493	527	561	602	639
Small convenience supermarkets	280	324	372	464	512	662	701
Total	672	764	871	999	1 081	1 274	1 351

Sources: USAID, CDA and meeting with Procurement General Manager, Marketing and Sourcing, Carrefour, July 2006.

themselves to become customer-driven and employ service-minded staff, improve hygienic standards and enlarge product ranges and services. The modern supermarkets store perishable fruits and vegetables in refrigerated gondolas and in cold storage at night. Home delivery services are becoming popular among small convenience supermarkets. The objective of the delivery services is to create customer loyalty. Therefore, retailers do not charge fees for delivery services.

The increasing number of working women has led to a rise in women's purchasing power and demand for prepared meals and easy-to-cook meals, including washed and cut vegetables packed in trays, each containing a complete meal for an individual family.

Carrefour, an international hypermarket chain, estimates that the total turnover in vegetables and fruits at its hypermarkets in Egypt amounts to 57,500 tons per annum, 33,000 tons of vegetables and 24,500 tons of fruits. Small and large supermarkets are estimated to sell around 99,000 tons of vegetables and 73,500 tons of fruits per annum. This amounts to approximately 6 per cent of the total horticulture consumption within the metropolitan area.

According to Carrefour, the quality of vegetables available on the domestic market falls far short of the expected quality and the range of cultivars and varieties compared with the quality of Egyptian exports purchased for Carrefour hypermarkets in the Gulf States. Carrefour consumer surveys have identified a need for the regular supply of all horticulture cultivars and a broader selection of varieties for each cultivar. For example, only one type of tomato (industrial Roma) is available. Carrefour would like to have the full range (cherry, beefsteak, heirloom, plum and on-the stalk tomatoes, etc.). This is also true for other vegetables, including baby vegetables. The shelf life of horticultural produce is also too short because the vegetables are not supplied through a cold chain. This leads to significant waste, which reduces profitability and results in dissatisfied customers, who find that horticultural produce spoils too quickly after purchase.

Input-Output Structure and Profit Distribution

The prices used in the following analysis are based on informal meetings with input suppliers, smallholders, exporters, retailers, processors and professional associations. The production and price statistics of the Ministry of Agriculture and Land Reclamation and the Eurostat and FAOSTAT databases have also been used.

Agro-inputs and machinery

Wholesalers of farm inputs charge a margin of around 14.7 per cent for a package of inputs, including fuel and lubricants. The margin for retail input suppliers in rural areas is 9.7 per cent.[8] It has been estimated that the total cost of inputs for the production of fresh horticultural produce during all seasons in 2003/2004 was EGP 2.1 billion (US$388 million), of which EGP 190 million (US$34.5 million) represented retailer margins.[9] The share of the annual sale of irrigation equipment, tractors and related implements used in the production of fresh horticultural produce has been estimated at EGP 10.5 million (US$1.9 million). The cost of inputs and machinery represents 19.4 per cent of the estimated total farmgate value of fresh vegetables.

Smallholders

Most farmers sell their horticultural produce to traders because:

- the crop is tied into credit obtained from the traders;
- the farmers do not have the necessary financing to harvest and transport;
- the farmers do not have the skills required to deal directly with wholesalers; or
- the farmers lack the crop volume to obtain favourable prices.

FTC farmers receive 110 per cent (tenant) and 87 per cent (own land) less revenue relative to OLIC farmers. The higher return to household labour among OLICs stems from their better prices for produce, their greater reliance on their own household labour and the lower cost of the credit they receive. It has been estimated that only 10 per cent of all farmers are obtaining institutional credit; it may therefore be assumed that the farmers selling directly to wholesalers are limited to the 10 per cent of the farmers growing fresh vegetables.[10]

Table 4 Input supply cost structure in traditional horticulture value chains, in EGP '000s

Cost items	Seeds	Fertilizers	Pesticides	Fuel	Machinery and equipment	Total inputs
Wholesalers purchase price	588 557	983 442	81 792	32 015	9 555	1 695 361
Wholesaler margin	94 108	134 548	17 955	960	945	248 516
Wholesale prices	682 665	1 117 990	99 747	32 975	10 500	1 943 877
Retailer margin	80 887	100 326	7 070	989	420	189 692
Retail price	763 552	1 218 316	106 817	33 964	10 920	2 133 569

Source: Derived during the study mission's informal visits to wholesalers and retailers.

8/ The costs and revenues on inputs have been obtained through interviews with two wholesalers in the metropolitan area and staff at three small input supply stores in Qena Governorate. This information has been triangulated with production input figures of the Ministry of Agriculture and Land Reclamation.

9/ Information derived from indicators and agricultural statistics, Central Administration for Agricultural Economics, Ministry of Agriculture and Land Reclamation, 2005.

10/ Appraisal Report, Upper Egypt Rural Development Project, IFAD, 2006.

Table 5 Cost mark-ups for tomato production

Items for tomatoes	EGP per feddan			Revenue share, %		
	FTC			FTC		
	Tenants	Own land	OLIC	Tenants	Own land	OLIC
Revenue (tomatoes 16.95 tons/feddan)	4 882	4 882	6 084			
Inputs	1 570	1 570	1 570	32.0	32.0	26.0
Irrigation (fuel and depreciation)	235	235	235	5.0	5.0	4.0
Machine cost (fuel and depreciation)	506	506	506	10.4	10.4	8.3
Hired labour for harvesting			75	0.0	0.0	1.2
Transport			254		0.0	4.2
Other cost	252	252	252	5.2	5.2	4.1
Cost of finance	678	678	115	13.9	13.9	1.9
Cost of land rent	650			13.3		
Return to household labour	991	1 645	3 077	20.3	33.7	50.6
Return per day of labour (92 days)	10.8	17.9				
Return per day of labour (125 days)			24.6			

Source: Study mission findings and triangulation with statistics of the Ministry of Agriculture and Land Reclamation.

Traders

Traders within a particular area operate as a cartel. They create an oligopolistic situation that enables them to set market prices for agricultural produce. The total price mark-ups of traders amount to 32.8, 38 and 48.4 per cent for the three marketing levels (village, governorate and metropolitan), respectively, of which 16.5 per cent is profit. The profit margin appears high particularly if one considers the short duration of the investment: at most, three or four days depending on the marketing level. The transport margin is 30-50 per cent higher in Egypt relative to countries such as Lebanon and Jordan; this reflects poor road conditions and the fleet of relatively old trucks that are expensive to maintain and run.[11] The cost of packaging materials is relatively low because crates and bags are used several times before they become worn and are replaced.

Wholesalers

The mark-ups for wholesalers are 66.6, 81 and 110 per cent, respectively, for each of the three marketing levels. Waste at the three marketing levels represents 12, 18 and 30 per cent, respectively (village, governorate and metropolitan). The 17.5 per cent profit margin (before paying rents on wholesale markets) is high considering that hardly any value has been added to the produce (4.3 per cent in sorting) and that wholesaler capital is only invested in the produce for a few days. This indicates that there is an oligopolistic collusion among wholesalers similar to the one found at the level of traders.

Table 6 Price mark-ups, traders

Cost items	EGP per feddan for FTC	FTC revenue share, %	EGP per feddan for FTC	FTC revenue share, %	EGP per feddan for FTC	FTC revenue share, %
	Village		Governorate		Metropolitan	
Farmgate price	4 882		4 882		4 882	
Labour cost, harvesting	385	7.9	385	7.9	385	7.9
Packaging materials	128	2.6	128	2.6	128	2.6
Loading and offloading	30	0.6	30	0.6	30	0.6
Transporting	254	5.2	508	10.4	1 016	20.8
Traders profit	805	16.5	805	16.5	805	16.5
Traders sales price	6 484	132.8	6 738	138.0	7 246	148.4

11/ World Bank, Poverty Reduction Strategy, 2004.

Table 7 Price mark-ups, wholesale price

Cost items	EGP per feddan for FTC	FTC revenue share, %	EGP per feddan for FTC	FTC revenue share, %	EGP per feddan for FTC	FTC revenue share, %
	Village		Governorate		Metropolitan	
Farmgate price for FTC	4 882		4 882		4 882	
Wholesaler purchase price	6 484	132.8	6 738	138.0	7 246	148.4
Sorting	34	4.3	93	7.5	304	14.1
Waste	761	12.0	1 152	18.0	1 851	30.0
Wholesaler profit	852	17.5	852	17.5	852	17.5
Wholesale price	8 131	166.6	8 835	181.0	10 253	210.0

*Also revenue for the FFI farmer.

Table 8 Price mark-ups, purveyors

Cost items	EGP per feddan	FTC revenue share, %	EGP per feddan	FTC revenue share, %
	Governorate		Metropolitan	
Farmgate price	4 882		4 882	
Purveyor price	8 835	181.0	10 253	210.0
Transport	150	3.1	277	5.7
Sorting, packaging	830	17.0	1 335	27.3
Waste	375	7.7	375	7.7
Profit margin	440	9.0	1 025	21.0
Purveyor sales price	10 630	217.7	13 265	271.7

Purveyors

Purveyors buy from wholesale markets and supplying retailers and government institutions. For large supermarket chains and the hypermarkets, the produce is sorted and packed in cartons, trays with cellophane, or plastic bags. The average waste for the purveyor is 7.7 per cent; for packaging, the cost share is 17.0 and 27.3 per cent, respectively, for the governorate and metropolitan levels. Although purveyors add value to the produce by sorting and packaging, the actual profit – 5 per cent at the governorate level and 10 per cent at the metropolitan level – is high.

Retailers

In the analysis below, an average retail price has been used for all retailers; however, prices at hypermarkets and large supermarket chains are around 10 per cent less than the prices at street stalls. It is estimated that modern retailers account for about 6 per cent of total tomato sales in the metropolitan area, amounting to around 60,000 tons annually (120 kilograms of tomatoes per day for each of the modern retail outlets) and a retail value of EGP 201 million (US$36 million).

The Metro, Carrefour and Alfa supermarket chains have all expressed interest in dealing more directly with farmer associations and cooperatives. This represents an excellent opportunity for smallholders to become suppliers, if they are properly organized.

In response to changes in consumer demand for higher quality products with a longer shelf life, the supermarkets are increasingly trying to source vegetables delivered through cold chains.

Table 9 Price mark-ups for retailers

Cost items for tomatoes	EGP per feddan	FTC revenue share, %	EGP per feddan	FTC revenue share, %	EGP per feddan	FTC revenue share, %
	Village		Governorate		Metropolitan	
Farmgate	4 882		4 882		4 882	
Retailer purchase price	8 131	166.6	10 630	212.7	13 256	264.1
Packaging material	194	3.0	245	5	488	10.0
Retailer profit	665	13.6	830	17.0	2015	41.3
Consumer prices	9 128	187.0	12 120	236.5	16 276	326.0
Price per kilogram (EGP)	0.61		0.87		1.37	

Governance of Traditional Domestic Value Chains

Governance: smallholders and agro-input suppliers

The competition among input suppliers is limited, leaving smallholders with little choice regarding the range of inputs and prices. The small quantities of inputs purchased by individual smallholders is insufficient to allow the smallholders to bargain for better prices or make purchases directly from wholesalers. This opens the way for the control by input suppliers over the relationship between the two parties. The form of governance is therefore coordinated and controlled by the retailers.

Governance: smallholders and traders

The traditional fresh tomato value chain is not especially complex, and the quality requirements on traditional markets are also low. This means that traders and wholesalers have little incentive to establish specific relationships with smallholders. This situation leaves most smallholders at the mercy of the wholesalers, since wholesalers alone determine whether and when they buy, how much they will purchase and at what price, particularly if the produce of smallholders is tied up in credit. If a smallholder rejects an offer, this involves the risk of not selling anything if no other trader appears, which is likely given the oligopolistic collusion among traders. It may therefore be concluded that the governance of the relationship is coordinated and controlled by traders.

Governance: traders, purveyors and wholesalers

Governance among traders, purveyors and wholesalers is coordinated and controlled by the wholesalers.

Governance: purveyor and retailers

The governance relationship between purveyors and retailers is market coordinated, and control resides with the purveyors in the case of non-modern retailers, whereas the control over the relationship between modern retailers and purveyors is more balanced because modern retailers possess the knowledge and the capacity to buy directly from wholesale markets.

Value chain analysis on export quality

For the export market, 26 different types of vegetables, 24 different types of fruits and 8 types of herbs and spices are grown. The value chain structure is similar for all these different types of produce exports. Only a few exporters are engaged in supplying the modern domestic retail network. The phases involved in the value chains include input supply, contractual production, exports and imports and, in some instances, also domestic retailers.

Market Opportunities

The annual demand for fruits and vegetables for processing is rising by 9.9 for fruits and 12 per cent for vegetables. This rapid growth offers immense opportunities for smallholders to become actively involved in supplying the industry.

It has been estimated that a total of 14,000 feddan is under organic production; the estimated annual growth is 20 per cent. Unfortunately, exporters were not forthcoming about production levels and the expected growth in demand. These indicators appear to be substantial and growing between 10 and 20 per cent per annum.

Exports

The total estimated annual incremental growth in exports of fresh vegetables is 5.8 per cent, amounting to 47,000 tons; exports of fruits account for 5.2 per cent of exports, equal to 31,900 tons.

Figure 6 Technical structure of the value chain for export quality

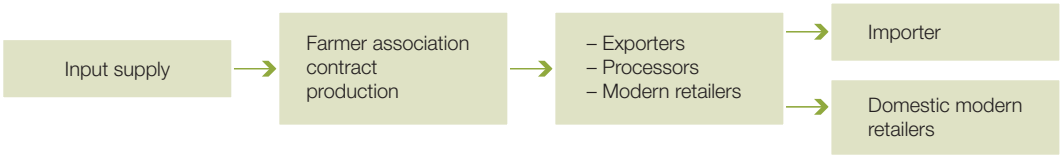


Table 10 Market size and annual growth trend, export quality value chains

	Market size and growth trends	
Markets	**Vegetables (tons)**	**Fruits (tons)**
Total market size	810 000	614 300
Annual growth trend for export	47 000	31 900
Annual growth trend for modern retailers	18 250	12 300
Annual growth trend for the processing industry*	70 970	16 800
Total annual demand growth for export-quality products	100 210	61 000

Source: FAOSTAT, 2005.

*Based on estimates of USAID; CAD.

Table 11 Export volume and growth trend

Market size and growth trend	Vegetables (tons)	Fruits (tons)
Export weight (2005)	809 730	614 300
Annual growth trend (2005)	47 000	31 900

Source: FAOSTAT, 2005

The modern retail network

According to Carrefour, growth in the demand for quality exports of horticultural produce in the modern retail network is conservatively estimated at 5 per cent per annum; this does not take into consideration the network's annual growth in total retail market share and the general increase in the consumption of horticultural produce. Present sales of vegetables by the modern retail network are estimated to be approximately 132,000 tons per annum; the demand for export quality would therefore amount to 6,600 tons per annum. Fruits sold through the modern retail network amount to approximately 98,000 tons; therefore, the modern retail network would demand 4,900 tons of export-quality fruit per annum.

Carrefour is experiencing 30 per cent annual growth in sales of frozen and other types of preserved horticultural produce; at times, it must import to meet this demand because the Egyptian processing industry is unable to keep up. The estimated sale of high-quality preserved horticultural products is 12,900 tons, and there is an annual incremental demand of around 3,870 tons (not including dried onions).

Organic foods supplied by the Sekem Group to Carrefour and by Agrofood Egypt to Metro is increasing steadily, but volumes are still small.

Importers

The most important importer of horticultural produce is the EU, where Italy, Germany, the United Kingdom and the Netherlands are the biggest importers, respectively importing 35, 17, 13 and 9 per cent of the total volume, thus accounting for 74 per cent of Egypt's total exports to the EU. The concentration of countries receiving Egyptian exports is narrow considering the EU membership of 27 countries.

The total volume of vegetables exported in 2005 amounted to 809,730 tons, representing 9.8 per cent of total production.[12] In total exports, 355,455 tons (79 per cent) went to the EU, around 15 per cent to the Gulf States and 5 per cent to other countries. The value of the exports was US$115 million in 2005. The export volume of vegetables grew by 5.8 per cent per annum between 2000 and 2005. This represented 47,000 tons.

The volume of fruit exports in 2005 was 614 tons, and the total value was US$220 million. The volume exported accounted for 7.4 per cent of total production. Exports grew by 5.2 per cent per annum between 2000 and 2005. This represented 31,930 tons.

Total exports of spices in 2005 reached 34,900 tons, of which 15,000 tons were exported to the EU.

Processing industry

In 2001 figures, the processing industry required approximately 856,870 tons to produce the preserved fruits and vegetables shown in table 12. The vegetables do not need to meet the cosmetic standards required of exports, but the producers of the raw materials for the processed food exported to the EU must be GlobalGAP certified; the produce has therefore been categorized as export quality.

12/ Source: FAOSTAT.

Table 12 Selected processed fruits and vegetables export and growth trends

Types of processed vegetables and fruits	1996	2001	Average annual increase
Frozen vegetables and fruits	14 360	41 800	31
Dehydrated vegetables	21 620	49 995	22
Fruits and vegetable juice and concentrate	2 390	10 440	56
Jams and preserves	460	1 440	35
Canned and glass-packed vegetables	3 990	25 735	91
Total	42 820	129 410	34

Source: USAID CAD.

Actors

Input supply

Smallholders who have entered into a contractual arrangement with an exporter are, in most instances, receiving seeds as credit in kind. The exporters and large farms deal directly with wholesalers of inputs and equipment; this enables them to bargain for favourable prices. Also benefiting smallholders is the fact that the cost of the seeds acquired in this way is 10 to 15 per cent lower than the cost of the seeds offered through local retail shops.

Farmer associations

The USAID Agricultural Exports and Rural Incomes Project and the project's implementing partners, CARE Egypt and the Coptic Evangelical Organization for Social Services (CEOSS), have been instrumental in initiating contract-farming arrangements in Upper Egypt between exporters and smallholders since 2004.

CARE and CEOSS have, respectively, assisted 76 associations (including 8 farmer associations dealing with organic production) and 30 village CDAs to reinvent themselves and also function as farmer associations. These farmer associations represent around 10,000 smallholders engaged in contract farming and cultivation on some 7,000 feddan of land; some or part of the land is used for producing horticultural crops during all three seasons. This means the total area under contract farming is more than 12,000 feddan per annum.

CARE and CEOSS provide CDAs with refresher training in CDA management and advice on new elections for boards of directors, which have not taken place regularly for many years. Thereafter, CARE and CEOSS link the CDAs to potential exporters, and export contracts are drafted and signed. The contracts are basic forward contracts set at fixed prices, stipulating the area, quantities and quality to be purchased by the exporters. The exports also list crop-control agents that may be used and other requirements regarding the crop husbandry practices with which the smallholders must comply.

After the contracts have been agreed upon, CARE and CEOSS organize the necessary technical training, including GlobalGAP certification. The cost of GlobalGAP certification for an individual farmer is EGP 5,000, and, for a group, it is EGP 7,000, making the cost insignificant for farmer association members, but unattainable for individual smallholders.[13]

The exporter provides the CDA with a list of recommended technical advisers (TAs) who are hired to train the smallholders on technical aspects of horticulture production. In most cases the cost of the TA has to be born by the farmers as only a few exporters pay for the TA.

Although the use of CDAs to double as farmer associations has its merits first and foremost because the CDAs already exist, there are drawbacks that could affect the long-term sustainability and growth of farmer associations. The drawbacks include the following:

- The leadership of the CDAs is not necessarily involved in producing horticultural crops. This has the potential of reducing their interest if more attractive activities appear.

13/ The cost cited is the fee charged by the Egyptian Centre of Organic Agriculture.

- Although CDAs participating in organizing contract farming have special horticulture committees, they are open to all members, potentially watering down the development of strong thematic farmer associations.
- Some smallholders perceive CDAs as government institutions because CDA leaders are often the same people who are on village councils and active in cooperatives. This reduces the interest of smallholders in participating.

In general, farmer association members were satisfied with the contract arrangements, but some members reported that the exporters did not buy their products because there was no market at the time of harvest. Unfortunately, the respective CDAs were apparently not in a position to assist because contracts in any form are difficult to reinforce, and, if the case is handed over to the juridical system, it will take years, if at all, for the case to be settled. During the time the case is caught up in the juridical system, the smallholders have to pay lawyers' fees, which is financially impossible. This problem could be reduced if farmer associations had special legal status and could enter into a contractual relationship with exporters, rather than merely negotiating contracts on behalf of the individual membership.

Smallholder contract producers

The average area under horticulture production by each smallholder does not exceed 0.7 feddan in any given season, which is about 23 per cent of the total landholdings of smallholders. This means the contract ventures are important for smallholder earnings.

The main differences between crop husbandry practices under contract farming and the corresponding practices in the traditional value chain for fresh vegetables include the following:

- GlobalGAP standards must be maintained.
- If production is aimed at the organic market, the production specifications issued by the Egyptian Centre of Organic Agriculture must be followed.
- Planting occurs according to the fixed schedules of exporters; intervals are staggered.
- Irrigation occurs according to pre-fixed schedules provided by exporters.
- The pest control instructions prescribed by exporters must be strictly followed, and, under no circumstances, must pest control agents not specifically authorized by exporters be used.
- An innovation for most smallholders is the production of horticultural crops under plastic row tunnels, enabling the supply of early crops, particularly green beans, cantaloupes and potatoes.
- The pre- and post-harvest handling of horticultural crops is also a new practice and is particularly important in maintaining the export quality of onions and potatoes, but also other root crops, as well as for fruits.

On-farm post-harvest handling includes:

- pre-sorting the produce in the field and packaging it into boxes ready for export or into washable hygienic plastic boxes or placing the produce into new clean bags, depending on the crop, if the produce is to be transported to buyers for packaging, sorting and cold storage;
- filling packaging containers to the level advised by exporters so as to reduce bruising; and
- harvesting, sorting and packaging carried out according to the instructions of the exporters (e.g. the correct sugar content of fruits, the proper dryness of onions and potatoes and the timely delivery of the produce).

Exporters

An increasing number of smallholders are participating in the horticulture export market through contract farming; however, the bulk of horticultural produce for export is still produced by around 150 large-scale farmers, of whom many are also exporters.

The Horticultural Export Improvement Association, the Egyptian Spices and Herbs Export Development Association and the Sekem Group are promoting the idea of contract farming;

12 members of these associations – some are members in all three organizations – are involved in the contract arrangement. Two of these companies, Agrofood Egypt and the Sekem Group are engaged in the export of organic horticultural produce. There are basically four reasons for exporter interest in contract farming in Upper Egypt:

- the available air cargo space out of Cairo airport to Europe is fully utilized; however, many tourist flights land at Luxor in Upper Egypt; considerable air cargo space is available there;
- exporters have no land in the area or have utilized all their own land resources;
- the crop season starts four to six weeks earlier and up to eight to ten weeks if crops are planted under plastic row tunnels, thereby allowing exporters to dominate the EU market for early horticultural produce; and
- exporters are well positioned because of the new pre-cooling, sorting, packaging and cold-storage facility under construction at Luxor airport.

Exporters have contracted smallholders to grow ten different types of vegetables (garlic, eggplants, butternut squash, pumpkins, green beans, onions, potatoes, cucumbers, and okra), seven different fruit cultivars (cantaloupes, bananas, grapes, strawberries, mangoes, watermelons, and sweet melons) and eight different types of herbs, medicinal plants, and spices (hot peppers, basil, mint, fennel, marjoram, hibiscus, anise, and henna). Perishable produce is pre-cooled and shipped by air from Luxor airport, and less perishable produce is also pre-cooled and then transported to Alexandria in 40-foot refrigerated sea containers for forwarding to Europe by ship.

Exporters have expressed satisfaction at the effort of organizing farmers into farmer associations, thereby allowing production at scale; logistically, it would not have been possible to deal with the smallholders individually. However, some exporters hope the farmers will eventually become organized into specialized farmer associations open only to members active in the production of horticultural crops. This would provide the following advantages:

- Contract could be signed with the entire group, thereby reducing administrative and logistical costs.
- GlobalGAP auditing and organic certification would be easier and cheaper.
- Importers would accept farmer associations as production units and as contractual out-growers for the exporters. A significant amount of Kenya's horticulture exports is produced by farmer associations and is fully accepted by importers because of the production at scale, the close ties to exporters and the ease of auditing the GlobalGAP systems of farmer associations.
- Farmer association members can exercise peer pressure among members to foster compliance with agreements, production practices and delivery schedules.

Box 1 SME start-up located within a rural community

The Stars of Egypt Export Co., a company located in Upper Egypt, is buying all its produce from farmer association members. The company's owner (a young graduate) benefited from a USAID study tour to Germany and the Netherlands in 2004 and, upon returning, he upgraded his packaging and cold-storage facilities to HACCP standards and started to export garlic and onions to the EU. Since then, the company has added a wider range of vegetables for export to the EU.

The company is engaged in contract farming with farmer associations in Beni Suef, Fayoum and Assiut, and more than 400 smallholders are supplying it through these groups. The company employs 240 women in sorting and packaging, all trained and certified GlobalGAP and HACCP horticultural produce handlers. The company also employs 40 men, who are mainly involved in packaging and container transport.

Another advantage of the company's location is the fact that company profit is being reinvested in the local rural area. This compares with the situation in the metropolitan export market, where all the profit is spent away from the rural area of cultivation and therefore does not contribute to the growth of the rural economy.

The relationship between exporters physically located within an area and farmers appears to be much closer than the relationship with exporters in metropolitan areas. The relationship between exporters from within the area who are not involved in producing crops but rely entirely on buying from smallholders through farmer associations is even better; with improvements in farmer association structures, these relationships could become true partnerships. According to CARE and CEOSS, four of the participating exporters are located within Upper Egypt. A good example of an exporter located within a local community is described in box 1.

Processors

The processing industry for horticultural produce is growing by a rapid 34 per cent per annum. The industry has the following composition (according to method of conservation):

- Six large export companies (HACCP certified) are engaged in freezing potato chips, artichokes, beans, peas, mixed vegetables and Spanish vegetables.
- Eleven companies (HACCP certified) dehydrate vegetables, the bulk of which are onions.
- Five companies (HACCP certified) are producing fruit and vegetable juice and concentrate for export; there are also a number of small companies producing juice.
- Many companies are engaged in the production of jams and preserves, but only a few of these produce for the export market.
- A number of large companies, e.g. Heinz, are active in canned and glass-packed vegetables, and many small companies are producing for the domestic market.
- Around 150 companies are engaged in processing herbs and spices as aromatics, for medicinal purposes, for tea and as food additives (see box 2).

Importers

There are basically two types of importers of horticultural produce:

- wholesalers dealing with several buyers within their respective countries and from other countries; and
- purveyors linked to a specific supermarket and solely dealing on this supermarket's behalf.

Large supermarkets are increasingly relying on specialized purveyors who have the expertise required to ensure the quality standards and proper auditing of producer compliance with

Box 2 Size and location of companies processing herbs and spices

The 10 biggest companies (HACCP certified) are located in the metropolitan area and are all engaged in export; the four largest companies account for 50 per cent of Egypt's exports. Another 20 medium-sized processors (HACCP certified) are also located in the metropolitan area and are producing dried herbs, spices, seeds and essential oils; most of these are also engaged in export.

In the metropolitan area, there are 60 small companies engaged in processing dried herbs and spices mostly for the domestic market. In Upper Egypt, an additional 40 small processors are engaged in the extraction of essential oils for sale on the domestic market. The crops being processed include marjoram, fennel, chamomile, mint, basil, thyme, geranium, fenugreek, chilli peppers, parsley, dill, lemon grass, caraway, aniseed, cumin and coriander.

The processing consists of drying the whole plant or only the seeds. After drying, the whole plant is milled into different particle sizes and packed. The seeds are sorted according to size and colour and packed as whole seeds or milled into various grades of flour. The last category in processing is extracted essential oils. The Sekem Group is involved in processing organic herbs and spices, of which 80 per cent result from their own production and 20 per cent from contractual arrangements with smallholders. The company exports fresh produce and processed items, including food additives, tea, oils, cosmetics, homoeopathic medicines, perfume and a full range of aromatic toiletries.

GlobalGAP. Because of the strict standards, small producers who have independent GlobalGAP certification are increasingly being excluded as suppliers for the export market because of the costly difficulties associated with the logistics of handling many small suppliers. However, importers do work with small farmers if several of these are organized into groups, registered and GlobalGAP certified as one production unit, and tied in with an exporter who helps ensure quality.

Specialized purveyors are increasingly importing pre-packed ready-to-eat horticultural produce for supermarket shelves; the demand for this type of product is growing rapidly.

Importers of organic horticultural produce are more inclined to accept smallholder suppliers as long as these are properly certified and audited.

Input-Output Structure and Profit Distribution

Green beans and potatoes are used in the forthcoming analysis aimed at clarifying the input/output structure and profit distribution in both high-value perishables and low-value, less perishable horticultural produce.

Egypt is the third most important supplier of green beans to the EU after Morocco and Kenya; the three countries, respectively, supplied 102,000, 35,000 and 26,000 tons in 2005, thus accounting for 89 per cent of EU green bean imports. Imports of green beans into the EU grew, on average, by 9.4 per cent per annum between 2000 and 2005. Comparatively, the annual exports of Morocco, Kenya and Egypt grew by 44, 5 and 9.8 per cent, respectively. There is no quota restriction on green beans exported to the EU from Egypt.

Egypt is the second largest supplier of potatoes in the EU after Israel, exporting 40 per cent (243,000 tons) and 47 per cent (283,000 tons), respectively, and accounting for 87 per cent of extra-EU imports. Italy is the most important importer, representing 40 per cent of potato imports, followed by Greece, Germany and the United Kingdom, importing 20, 19 and 9 per cent, respectively, and accounting for more than 88 per cent of total extra-EU potato imports. There is a limited quota on Egyptian potato exports to the EU: 250,000 tons of new potatoes per annum. This quota is often not fully utilized mainly because Italy places technical import restrictions on potatoes, which appears to be a barrier aimed at protecting Italian producers in years when production is high. This phenomenon highlights that a narrow market involving only four of the 27 EU countries has disadvantages.

Smallholder cost mark-ups for export quality

The advantages of contract farming are related to the reduced number of actors in the marketing chain. This tends to reduce costs and increase yields because of the specialized technical advisory services involved, which leads to reductions in the cost of inputs and improvements in the utilization of household labour. Another advantage for smallholders is the fact that the technical complexity of production is much higher in contract farming than in the traditional domestic value chain. This causes exporters to remain loyal to smallholders because it is costly and time consuming to identify new producers. Of the two export crops examined, the lowest return to household labour is EGP 3,990 in the production of conventional potatoes on rented land compared with EGP 1,645 in the production of tomatoes on smallholder land, including the production credits of traders (see table 5).

It is also noteworthy that the production of organic vegetables is a better proposition than the production of conventional crops.

Exporter cost mark-ups

Produce for export. If there is a cluster of smallholders producing sufficient quantities of perishables in Upper Egypt, the exporter will arrange for a mobile pre-cooling unit to carry out pre-cooling at the production location. In Lower Egypt and the metropolitan area, the produce will be collected from smallholders and transported to the permanent pre-cooling facilities of exporters. After pre-cooling, sorting and packaging, the produce will be transported to Luxor or Cairo airport

Table 13 Cost mark-ups for the production of green beans and potatoes

Cost items for production	**EGP per feddan**				**Revenue share, %**			
Yield 6 tons, 70% export and 30% local	**Green beans**		**Potatoes**		**Green beans**		**Potatoes**	
Yield 15 tons, 80% export and 20% local	**CF***	**OF****	**CF**	**OF**	**CF**	**OF**	**CF**	**OF**
Revenue	6 900	8 280	11 670	9 936				
Fertilizers and pest control	470	564	1 140	677	6.8	8.2	9.8	11.8
Seeds	510	612	4 750	734	7.4	8.9	40.7	48.8
Irrigation (fuel and depreciation)	120	144	140	173	1.7	2.0	1.2	1.4
Machinery cost (fuel and depreciation)	190	228	365	274	2.8	3.4	3.1	3.7
Hired labour for harvesting	56	67	280	81	0.8	1.0	2.4	2.9
Other costs	135	162	150	194	2.0	2.4	1.3	1.6
Cost of financing	40	48	115	58	0.6	0.7	1	1.2
Cost of land rent	740	888	740	1 066	10.7	12.8	6.3	7.6
Return to household labour, own land	5 379	6 455	4 730	7 746	78	93.6	40.5	48.6
Return per household labour, days (160 days)	33.6	40.3	31.5	48.4				0
Return to household labour, rented land	4 639	5 567	3 990	6680	67.2	80.6	34.2	41.0
Return per household labour, days (150 days)	31	37	27	45				

Source: Care Egypt.

* CF = conventionally farmed. **OF = organically farmed.

Table 14 Cost mark-ups for exports

	Logistic time, hours		**Cost, EGP**		**Farmer revenue share, %***	
Activities and cost items	**Green beans, 5 tons**	**Potatoes, 40 tons**	**Green beans, 5 tons**	**Potatoes, 40 tons**	**Green beans**	**Potatoes**
Cost of the crop (return to household labour)			6 500	32 000		
Coordinate timing of harvesting	8	2	20	30	0	0
Pre-cooling, including transport from the field	8	16	1 250	10 000	19	63
Grading and packaging, including carets and bags	5	8	3 750	1 375	58	9
Loading, transport to port and offloading	5	7	60	240	1	2
Port administration	3	3	120	120	2	1
Subtotal	29	36	11 700	43 765	180	175
Sea or air transport	4	30	18 625	20 625	286	131
Road transport to importer and offloading	8	16	1 375	2 065	21	13
Subtotal	8	16	20 000	22 690	307	144
Unforeseen and losses	-	-	1 010	2 990	16	19
Landed cost	37	52	32 710	66 504	503	338
Exporter margin			12 830	16 660	197	106
Importer purchase price			45 540	83 164	700	444
Cost per kilogram			9.1	1.1		

Source: Data obtained from producers and exporters.

* Based on 1 feddan of landholding only.

for shipment. Less perishable produce will also be pre-cooled, but shipped by sea in refrigerated containers from Alexandria to the final destination. In the analysis below, a typical export quantity of 5 tons of beans and 40 tons of potatoes has been used, but the share of the revenue is based on 1 feddan of smallholder land.

The total exporter margin for beans and potatoes is 700 and 444 per cent, respectively, of which 72 and 76 per cent, respectively, are related to value added, which makes the actual return on the exporters investment 28 per cent for beans and 24 per cent for potatoes.

Produce for the modern domestic retail market. According to Carrefour, a premium of around 45 per cent could be paid for export-quality beans, and 20 per cent for export-quality potatoes. If exporters had sold the above consignment to Carrefour instead, minus the cost associated with overseas shipment, it would have returned a profit of EGP 8,675 and EGP 4,032, or 26 and 17 per cent, respectively, for green beans and potatoes. The absolute monetary return is lower than the return on exported produce, but still lucrative.

Produce for processors. If an exporter had sold the produce to a processor, the profit (minus the cost related to pre-cooling, packaging and export administration) would have been 18 and 13 per cent, respectively, for beans and potatoes. This is lower than the profit for export and sale to supermarkets, but engagement in the supply for processors is still attractive.

Table 15 Cost mark-ups, exporter sales to the modern retail market

	Logistics time, hours		Logistics cost, EGP	
Activities and cost items	**Green beans, 5 tons**	**Potatoes, 40 tons**	**Green beans, 5 tons**	**Potatoes, 40 tons**
Cost of the crop			6 500	32 000
Coordination of harvesting	8	2	20	3
Pre-cooling, including transport from the field	8	16	1 250	10 000
Grading and packaging, including carets and bags	5	8	3 750	1 375
Road transport to importers and offloading	8	16		
Landed cost	-	-	11 520	43 378
Profit			4 032	8 675
Retailer price			15 552	52 055
Cost per kilogram			3.1	1.3

Table 16 Cost mark-ups for sale to processors

	Logistics time, hours		Logistics cost, EGP	
Activities and cost items	**Green beans, 5 tons**	**Potatoes, 40 tons**	**Green beans, 5 tons**	**Potatoes, 40 tons**
Cost of the crop			6 500	32 000
Coordination of harvesting	8	2	20	3
Road transport to importer and offloading	8	16	50	400
Landed cost			6 570	32 403
Profit			1 530	4 860
Processor price			8 100	37 263
Cost per kilogram			1.62	0.93

Table 17 Gross margin for importers

Produce	Germany	Moldova	Denmark
	Place of purchase, EGP per kilogram		
	Aldi supermarket chain	Market	Netto supermarket chain
Potatoes	4.5	5.2	4.7
Green beans	32.7	-	36.6

Source: Study team contacts in the respective countries.

Cost mark-ups for modern retailers

The cost mark-up for retailers would be around 28 per cent on the purchase price for beans and 30 per cent for potatoes. The distribution of the cost has not been made available to the study team. Visits to supermarkets revealed that the cost mark-up for organic produce is around 4 times higher than the cost mark-up for conventional produce.

Cost mark-ups for processors

Processors were not forthcoming in sharing cost information. However, working backwards from the retail price for frozen beans (EGP 5.25 per kilogram) and potatoes (EGP 11.1 per kilogram), the processors estimated that the cost mark-up on the retail price amounted to 67 per cent for frozen beans and 518 per cent for frozen potatoes (french fries). However, it was not possible to establish the distribution of the margins for any of the crops.

Cost mark-ups for importers

The study has not made an attempt to analyse input-output structures and the distribution of profit in importing countries. However, the consumer prices for potatoes were obtained from Denmark, Germany and Moldova. The average price was EGP 4.8, which means that the total margin generates EGP 122,582, or 177 per cent more than the landed price. Prices for green beans were obtained from Denmark and Germany, and the average margin was EGP 138, which is 400 or 540 per cent higher, respectively, than the landed price.

Governance

The governance structure over the relationship between contracted smallholders and exporters is complex because of GlobalGAP and other specific production requirements. It is difficult to codify the information for easy access by smallholders in general without the direct involvement of exporters. This makes the costs of switching to a new smallholder high and time consuming for exporters, and the only immediate market alternative for smallholders is the traditional domestic market, where revenues would be reduced. Collaboration between the two parties calls for a governance arrangement that supports the mutual interest in a long-lasting partnership.

Discussing the findings

Comparison of growth trends and smallholder involvement

The estimated annual growth trend for domestic value chains in vegetables and fruits is around 4 per cent, amounting to 672,000 tons of incremental horticultural produce. This compares with the export quality value chains, which show a 9.9 per cent growth in fruits, amounting to 110,715 tons of incremental produce per annum, and a 12 per cent growth in vegetables, amounting to 61,000 tons.

The rapid rise in demand for export quality is forcing exporters and processors, who have used all their own land resources, to obtain horticultural produce from smallholders. The potential for increasing the EU market share of Egypt by widening the number of countries receiving Egypt's exports is considerable. This would also raise the demand for Egypt's products.

It is important for smallholders to participate in producing export crops at a stable annual growth rate, thereby reducing the possible impact of economic shocks. The export crops with the most stable growth from 2000 to 2005 are shown in table 18. It would require an additional 2,778 feddan per annum to keep up with the growth in the demand for these crops. Exports of tomatoes have steadily increased over the past three years; the annual growth has been 40 per cent (1,505 tons). If this trend continues, the crop could also become important for smallholders.

Data on the consumption of vegetables in the modern retail market and the processing industry are not available by type of crop, but the bulk of consumption involves tomatoes, potatoes, onions, beans, peppers and artichokes, representing around 60 per cent of the total annual consumption of 89,220 tons for the two markets. It is estimated that an additional 8,922 feddan would be required to meet this growth.

Strawberries, grapes and bananas might be considered for fruit production by smallholders. They show yields relatively quickly and early and, therefore, only require a short period of investment before they generate a cash flow. Strawberries and bananas would show yields the year they are planted, while grapes would show yields 14 months after planting. The annual growth trend based on the period from 2000 to 2005 is shown in table 19, together with the corresponding incremental feddan needed for the extra cultivation.

Table 18 Growth trends for selected vegetable crops for export

Vegetable crops	Annual average growth		Estimated annual increase in feddan to produce the increase in exports
	Tons	%	
Potatoes	18 875	10	1 840
Green beans	2 090	10	442
Artichokes	1 271	31	135
Onions	1 168	63	82
Chillies and green bell peppers	720	91	106
Chicory and lettuce	587	24	61
Garlic	532	17	56
Melons	517	54	54
Total	-	-	2 778

Source: FAOSTAT, 2000-2005.

Table 19 Growth trends for selected fruit crops for export

Vegetable crops	Annual average growth		Estimated annual increase in feddan to produce the increase in exports
	Tons	%	
Strawberries	1 440	423	100
Bananas	480	490	25
Grapes	3 637	79	455
Total	-	-	570

Source: FAOSTAT, 2000-2005.

Table 20 Egyptian yields compared with yields of similar crops in selected countries, 2005

Selected crops	Country	Yield per hectare, tons	Yield difference, %
Tomatoes	Egypt*	40.33	
	Morocco**	54.55	+35
Potatoes	Egypt*	24.41	
	Israel**	34.96	+43
Watermelons	Egypt*	26.40	
	Morocco**	31.10	+18
Onions	Egypt	34.00	
	Morocco**	49.55	+46
Eggplants	Egypt*	25.57	
	Turkey**	26.57	+4
Cucumbers	Egypt*	21.70	
	Morocco**	49.55	+128
Green beans	Egypt*	10.19	
	Morocco**	11.25	+10

* Source: Derived from *Agricultural Statistics*, Central Administration for Agricultural Economics, Ministry of Agriculture and Land Reclamation, 2005.

** Source: FAOSTAT, 2005.

Comparison of input suppliers

The input suppliers for the traditional domestic value chains consist of many small retailers with relatively high margins. Competition is not significant mainly because there is no product or price differentiation among the retailers. This is aggravated by the lack of bargaining power among smallholders due to the small quantities they purchase.

Large commercial farmers and exporters are able to purchase inputs directly from wholesalers, import directly from overseas and buy directly from local manufacturers. This enables them to bargain for favourable prices. Smallholders engaged in contractual arrangements with exporters benefit from this mainly through the reduced cost of seeds, which are often supplied by exporters as credit in kind.

Comparison of production

Because of market imperfections, traditional domestic value chains do not provide financial incentives for investment by smallholders in upgrading the technical aspects of production. Although Egypt has some of the highest horticultural yields per hectare in the world, suggesting that crop husbandry is efficient, one may note in table 20 that, in comparison with countries possessing similar soil and climate characteristics and possibilities for irrigation, there is still room for considerable upgrading of yield performance in Egypt.

The single most important factor in realizing yield improvements in all horticultural produce, whether organic or conventional crops, is the introduction of drip irrigation, combined with fertilizer applications. The advantages over the furrow irrigation method that is practised are

- low moisture stress;
- improved fertilizer use efficiency;
- optimum growth, which would eliminate the need for furrows and thereby reduce labour costs;
- reduced pumping costs and reduced water use due to negligible evaporation and low percolation;
- it is better suited to the relatively saline water and soil; and
- if the drip is turned off, the land dries uniformly, thereby improving pre-harvest treatments for onions and potatoes, as well as other crops.

This upgrading would also result in significant water savings and increased fertilizer use efficiency. The use of pesticides would likewise decrease because the plants would not suffer from water stress and would thus become more resistant to pests and diseases.

Another important upgrade would involve a selection among varieties that would particularly address consumer demands in the modern retailer network. Because of the yellow leaf curl virus, farmers are basically left with no choice but to produce industrial roma-type tomatoes because of their resistance to the disease. This type of tomato also holds up well under the poor transport and handling conditions prevailing in most of Egypt. However, it has a uniform maturity and would bring the market to its knees during peak harvest, and the variety does not address the demand in the modern retail sector, which is seeking a broader selection of different types of tomatoes.

Another example is the screening and breeding of new varieties of fine green beans, which could boost the volume and the value of the export, particularly to Europe. In terms of a successful upgrade, it is worth mentioning the development of a new fennel variety important for smallholders (see box 3).

The demand for a broader varietal choice also holds true for cultivars other than tomatoes, beans and fennel (e.g. baby vegetables, different types of potatoes, etc.). A new trend in many European countries is to buy vegetables and fruits according to their nutritional value, which is directly related to the variety cultivated.

A considerable number of smallholders in contract arrangements are growing cantaloupes under row tunnels to start the crop early, and, among the larger farmers (those possessing two or more feddan each), drip irrigation is also being used. It is claimed by CARE and CEOSS that the trend in upgrading production involves growing in tandem with the development of trust between contracted smallholders and exporters. Production under tunnels eliminates the use of pesticides in the early stages of production, and drip irrigation reduces water consumption and water stress, thereby rendering the plants more resistant to pests and diseases.

Box 3 Development of a new variety of fennel

A good example of a successful upgrade is a collaborative effort by smallholders in Upper Egypt, the Egyptian Spices and Herbs Export Development Association and the Desert Research Centre, with support provided through the Agricultural Exports and Rural Incomes Project, to develop a new variety of fennel for export. The old type of fennel contained too much estragole (methyl chavicol), making it impossible to use the product in pharmaceuticals and as a nutritive substance for humans. The product is therefore unsuitable for export. The new type of fennel developed has an estragole content not exceeding 4 per cent and an anethole concentration that varies between 52 and 73 per cent, making the variety suitable for export and for processing in the pharmaceutical industry. The new variety is now being cultivated by smallholders contracted by members of the Egyptian Spices and Herbs Export Development Association for processing or for export in the form of seeds.

Organic production

Smallholders involved in producing for the Sekem Group and Agrofood Egypt are mainly desert farmers located on new land of a minimum of 5 feddan each. Because the land of these farmers has not previously been cultivated, there is no conversion time from conventional to organic production. However, there are also smallholders on old lands who are involved in organic production under the Agricultural Exports and Rural Incomes Project initiative. It has been reported that these smallholders actually achieve yields similar to the yields of conventional farmers, but that these smallholders need significant technical assistance and that not all the produce can be sold at a premium, for example, there is no market for milk and meat in Upper Egypt, and the logistics in transporting these products to the metropolitan area for sale to the Sekem Group is too costly because of the low quantities. The smallholders located closer to the Sekem Group have a market for their entire production, including milk and meat. It is not feasible for smallholders to initiate organic farming without contractual arrangements with buyers who are able to purchase all the output of the farms. A well-organized exporter would be able to sell the non-exportable produce (milk and meat) to the hotel industry if the supply is constant.

Comparison of produce handling

Traditional domestic value chains are experiencing huge post-harvest losses due to the lack of cold chains. This exposes produce to the sun during many hours of transport in ambient temperature, resulting in the deterioration of the condition of the vegetables, which is aggravated by the bruising caused by poor packaging. The unhygienic packaging, together with the ambient storage at wholesale markets, also speeds up the deterioration of the vegetables. To reduce these losses, it is necessary to imitate the export value chains, in which produce is moved from producers all the way to end-users who reside as far away as Europe. This would require considerable investments in cold chains, including pre-cooling plants and storage and refrigerated transport to retailers.

The recently organized shipping lines connecting the port of Alexandria to European ports without intermediate stops have increased the flexibility and reduced the costs of horticultural produce exporters. Alexandria is the last port of call before the ship arrives in Europe. It is therefore necessary to book cargo space well in advance to ensure sufficient space on vessels upon arrival in Alexandria. If space is ensured, these shipping lines are reliable for the shipment of perishable produce such as grapes, strawberries and green beans.

When the cold chain facility at Luxor airport opens, it is expected that horticulture production in Upper Egypt will grow rapidly and will be accelerated when the planned private Italian investment in additional cold chain facilities is concluded. This growth would likely warrant the organization of shipping lines to call on the Red Sea ports, which are around 150 kilometres from Luxor and which represent an additional incentive for the production of horticultural crops in Upper Egypt. The produce could then be moved by refrigerated sea containers to Europe less expensively relative to the cost of using Alexandria port, which is 800 kilometres away and requires road transport.

Box 4 Plant extraction in Egypt

Egypt is one of the world's major suppliers of high-quality pharmaceutical plants. However, the local pharmaceutical industry makes hardly any use of these raw materials. The companies generally use imported extracts from Europe instead of utilizing the more than 1,000 domestic plant species with pharmaceutical and cosmetic potential. Atos Pharma was established in 1986 as a joint venture company of the Egyptian private exporter the Sekem Group and the Deutsche Investitions- und Entwicklungsgesellschaft to develop the Egyptian natural pharmaceutical market. Atos Pharma has recently developed a pilot project that is in field trial; through the project, plants are cultivated, and the most favourable seeding and harvesting times and extraction procedures are tested. This public-private partnership project opens up valuable sources of raw materials for Atos Pharma, while contributing to more effective utilization of local resources. The results and lessons learned are highly promising for production scaling-up among small farmers.

Table 21 Comparison of cost mark-ups for the two value chains

Cost mark-up items	Share of farmer revenue, %	
	Tomatoes*	Potatoes**
Farmer revenue (EGP)		
Cost of the crop	100	100
Pre-cooling, including transport from the field		63
Labour cost, harvesting	7.9	
Grading and packaging, including carets and bags	44	9
Road transport	27.1	13
Sea transport and administration		134
Unforeseen and losses		19
Waste	37.7	
Profit margin	55	106
Total cost mark-up	271.7	444

* Source: Table 5.

** Source: Table 13.

Comparison of cost mark-ups

Cost mark-ups in the traditional domestic value chains amount to 271.7 per cent. Of this, 81.7 per cent is related to waste (37.7 per cent waste and 44 per cent sorting related to the waste), which thus accounts for more than 30 per cent of the total cost mark-up. The corresponding figure in the export chain is 19 per cent, which equals 4.3 per cent of the total cost mark-up in the export chain. The cost of road transport in the domestic value chain is 27.1 per cent; the fleet of trucks in this chain is relatively old and expensive to operate. This compares with the 13 per cent in the export chain, which relies on newer and bigger trucks that are less expensive to operate. The actual profit margin as a share of total investment is 20 per cent for the domestic value chain and 24 per cent for the export value chain. The profit of 20 per cent for traditional domestic value chains is extremely high considering that 30 per cent of the total value added is made up of losses, which compares with the less than 5 per cent in the export value chain.

Comparison of cost mark-ups among retailers

The modern retail network price for horticultural produce is around 10 per cent less expensive than the traditional retail outlet price; moreover, the modern retailer is adding value to the produce by keeping it fresh, indoors, packed and well presented.

Comparison of cost mark-ups among smallholders

The growth in horticultural produce marketing through the traditional domestic value chains might be expected to bring about significant improvement in the situation of smallholders. However, this is not happening due to the missing or imperfect markets for credit and land rental, the inadequate marketing information and the poor organization among smallholders. Traders have been left in control of market coordination. If smallholders were to become organized into well-managed farmer associations and cooperatives, their bargaining power and their ability to capture the benefits of economies of scale could change the distribution of cost mark-ups, enabling the smallholders to increase their revenue significantly. If the smallholders marketed directly to wholesalers and if the profit of the traders could be added to smallholder household incomes, this would improve the returns, as shown in table 22. Even if smallholder marketing were only improved at the village level, there would be a significant increase in the profits available for smallholders.

The average smallholder in Egypt generates 30 per cent of household income through plant production. This amounts to EGP 3,725, of which 36 per cent is derived from horticultural crops, amounting to EGP 1,340.[14] If the average gain for the two FTC categories in table 22 were added to

14/ *Agricultural Statistics*, Central Administration for Agricultural Economics, Ministry of Agriculture and Land, 2005.

Table 22 Traditional domestic value chain return to households at different marketing levels

	Interlocked with trader		Smallholder marketing, village			Smallholder marketing, governorate			Smallholder marketing, metropolitan area		
	FTC*		FTC**			FTC**			FTC**		
Return to household	**Renting**	**Own**	**Renting**	**Own**	**OLIC***	**Renting**	**Own**	**OLIC****	**Renting**	**Own**	**OLIC****
Return to households, EGP per feddan*	991	1 645	1 846	2 497	3 077	2 698	3 349	3 925	3 550	4 201	4 777
Increase, %			86	52		172	103	27	258	155	55
Average for the two FTC categories, %			69			138			207		

* Source: Table 5.

** Source: Adding traders profit to household revenue (*).

Table 23 Potential impact of smallholder organization of their own marketing at different levels

Return to households	**Marketing, village level FTC**	**Marketing, governorate level FTC**	**Marketing, metropolitan level FTC**
Incremental return to households, EGP per feddan	2 264	3 189	4 115
Increase in incomes from plant production, %	25	50	74
Increase in total average income, % (base, EGP 12 475)	7	15	22

Table 24 Impact on smallholders in the export quality value chains

	Green beans				Potatoes			
	Renting		Own		Renting		Own	
Return to households	**CF***	**OF****	**CF**	**OF**	**CF**	**OF**	**CF**	**OF**
EGP return to household / feddan for export chain	4 639	5 567	5 379	6 455	3 990	6 680	4 730	7746
Increase in total average income, % (base, EGP 12 475)	37	45	43	52	32	54	39	63

Source: Table 13.

*CF = conventionally farmed. **OF = organically farmed.

the horticulture return of EGP 1,340, the situation of the average Egyptian smallholder would appear as shown in table 23.

Reductions in post-harvest losses and transport costs could improve smallholder profit or improve smallholder competitiveness, thereby stimulating consumption; either outcome would benefit smallholders.

It should be noted that smallholder household returns from the export value chain are greater than the returns in the domestic value chain, and also high relative to the situation should farmers organize their own marketing (table 21); the only exception is the return on conventional potatoes, EGP 3,990. These findings show the importance of the effort to organize smallholders and the key role of smallholder contract arrangements with exporters, processors and supermarkets. It should also be noted that, if the average smallholder (see paragraph 160) produces for the export value chain, average smallholder household income would increase by 63 per cent in the case of organic potatoes and 32 per cent in the case of conventionally produced potatoes.

Wider impact on the rural economy

According to a study funded by the Government of Egypt and USAID, urban citizens spent 98 per cent of their earnings in cities and 2 per cent in the metropolitan area; rural people spent 77 per cent in villages and 23 per cent in cities.[15] The study also established that an average rural household (6.9 persons) has an average yearly income of EGP 12,475, of which 50 per cent is spent

15/ The Importance of Agricultural Growth to SME Development and Rural Employment in Egypt, July 2002, Sarah Gavian and Gary Ender, Abt Associates, Tamer El-Meehy and Lamia Bulbul, Environmental Quality International.

on food, 25 per cent on basic services (e.g., housing, fuel, medical care, clothes, education, transportation), 10 per cent on social functions (weddings, funerals, *Haaj* and *Umar*) and 10 per cent on financial obligations (e.g. debt payments). The remaining 5 per cent is spent on public services (water, electricity, taxes and sanitation) and consumer durables.

On the basis of this information, one may conclude that the marginal propensity to consume in villages by smallholders is around 64 per cent; this provides an economic multiplier of 2.8,[16] meaning that, for every additional Egyptian pound earned by a smallholder, an additional EGP 2.8 would be generated in the local economy. This would drive economic growth in the agriculture sector. Equally important, it would fuel non-agricultural SMEs in the villages, thereby generating needed job opportunities. Comparatively, people living in cities (among other traders) obviously do not contribute directly to local village economies.

If smallholders were organized to cultivate the selected crops mentioned under paragraphs 143, 144 and 145 and totalling 12,270 feddan annually, this would represent a major achievement in rural economic growth and a subsequent poverty reduction. It would require 21,910 smallholders annually to cultivate the area (average holding of 2 feddan, with a cropping intensity of 200 per cent, times 14 per cent, which is the average area under horticulture). If one uses the household return on potatoes (the crop with the lowest return, EGP 3,990, table 24) in calculating the overall economic benefits, this would generate EGP 49 million in net household income and, subsequently, produce an additional local economic multiplier of EGP 137 million.

In addition to household labour, it would also be necessary to hire seasonal employees equivalent to 1,345 full-time jobs annually, with total earnings of EGP 3.4 million (EGP 7 per day) and producing a local economic multiplier effect of EGP 9.5 million. Another EGP 90 million would be generated and used to cover the cost of inputs, and this would have an impact on the overall national economy, but little effect on local economies. Therefore, the total local economic benefit would amount to EGP 199 million (US$36 million).

To meet the estimated annual demand for organic produce, an additional 2,800 feddan would be needed. This could potentially benefit 5,000 smallholders (if the area for each smallholder is estimated as above). If one uses the household return on organic potatoes (the crop with the lowest return of EGP 6,680, table 24) to calculate the overall economic benefit, this would generate EGP 18.7 million in net household return and an economic multiplier of EGP 52 million. This would create 90 full-time jobs, valued at EGP 0.23 and produce an economic multiplier of EGP 0.64. Another EGP 1.9 million would be spent on purchasing compost from local producers; this would generate an economic multiplier of 5.3. An additional EGP 7 million would be earned and spent on procuring inputs from outside the local economy. Therefore, the total economic benefit to the local economy would be EGP 79 million (US$14 million).

If 21,910 smallholders were to become organized, and they improved their marketing situation to the first level mentioned in table 23, the total net return to household labour would be EGP 20 million, and the local economic multiplier would be EGP 56 million (US$10 million), bringing the total economic benefit to EGP 76 million (US$14 million).

Comparison of governance structures

The governance of the traditional domestic value chains is a classic example of market coordination with missing or, at best, imperfect markets for credit, information, marketing information, land rental and technical assistance and with all control in the hands of traders and wholesalers. The only realistic means to change this situation is the organization of farmers into farmer associations or cooperatives that enter into contract arrangements with buyers.

In the export value chain in which exporters and farmer associations enter into contracts, both parties must rely on each other to realize business operations. Because of the complexity and relative high cost of establishing the relationship, the contract arrangements should be long-term; this can only be achieved if governance is relational.

16/ $EM = \frac{1}{(1 - MPC)} = 2.8$

Conclusion and recommendations

Conclusion

Contract farming

Although contract farming is still in its infancy, the value chain analysis shows that it has merits in addressing several issues related to the missing or imperfect markets facing smallholders. It is also clearly essential that smallholders organize themselves into farmer associations as a prerequisite for entering into contract farming because farmer associations are more likely than individual smallholders working alone to obtain a beneficial arrangement. The advantages of membership in a farmer association that enters into contracts with exporters include the following:

Market information. The contractual arrangement provides the smallholder with information about the best type of crop to grow, the best variety, the quantity and the production method. Equally important, it provides a minimum price prior to planting and, in some instances, a minimum price with in-built upwards adjustment in case the market price rises. Because of the economy of scale, the farmer association can afford to hire qualified professionals to assist in checking if the price offered by an exporter is reasonable, thereby providing the farmer association with a bargaining tool.

Standard compliance and the market. The export market increasingly requires compliance with international standards. European supermarkets have established strict auditing requirements to meet these standards. This is reducing the opportunity for smallholders to participate in traditional or non-traditional export markets because of the logistical problems of dealing with many farmers. However, contract farming provides the necessary scale to help overcome the logistical problems, enabling smallholders to participate in the export market.

Advisory services, technical information, upgrading and competitiveness. The Government provides few extension services to the horticulture sector; this imperfect situation has been overcome through contact farming because farmer associations can afford to hire the necessary technical advisory services recommended by exporters given that the cost is shared among members.

Credit. The members of CDAs and farmer associations can obtain microcredit from the Social Fund for Development via their own organizations. However, for loan sizes over EGP 5,000, the members must provide collateral, which is often not possible because the title deeds are unavailable or because the members are tenant farmers. Commercial banks working with SEDO accept forward contracts from farmer associations as collateral if these are backed by several and joint liability among the members and exporters agree to pay the accounts of the farmer associations directly.

Input supply. The contracted smallholder benefits from the direct links between exporters and wholesalers of inputs, equipment and machinery that facilitate procurement at less cost. The scale of operations of farmer associations also makes it possible for the farmer associations to buy directly from wholesalers at less cost. Over time, it will be possible to link farmer associations horizontally, thereby increasing the bargaining power of smallholders.

Crops

It is clear that the production of organic horticultural produce provides the best return to the individual smallholder. However, the smallholders who may be assisted are not so numerous as the producers for the export and domestic value chains. It is therefore important that interventions supporting the horticulture sector adopt a balanced approach that encompasses organic crops, conventional export crops and crops for the domestic value chain.

Recommendations

Policy issues

Several policy issues that are believed to increase significantly the number of smallholders involved in horticulture production for export must be addressed; it is also important to increase the return to smallholders derived from supplying the traditional domestic value chains.

Contract enforcement. As a matter of high priority, new institutional arrangements should be developed for the resolution of disputes between farmer associations and exporters. Such institutional arrangements would contribute significantly to the rapid development of contract farming and the establishment of farmer associations. The most appropriate method for settling disputes is arbitration, which has the following advantages:

- Arbitrators with an appropriate degree of expertise would be appointed; this is usually not the case in the juridical system.
- Arbitration is often more rapid than litigation within the courts.
- Arbitration proceedings are less formal than litigation within the courts.
- Arbitration awards are private.
- The arbitration process is more flexible than the courts.
- There are limited avenues for the appeal of an arbitration award, which can mean that enforcement is more rapid and that there is less scope for a party to delay proceedings, which also results in lower costs.

The main disadvantages of a specialized arbitration body are the following:

- If there are multiple arbitrators on a panel, juggling schedules for hearing dates may lead to delays.
- Arbitration awards allow fewer enforcement remedies than do judgments in the juridical system.
- Arbitrators are generally unable to order interlocutory measures against a party, making it easier for a party to take steps to avoid enforcement.

It is recommended that the arbitration service be carried out by an arbitration body under the auspices of one of the recognized professional associations or a consortium of professional associations and farmer associations. The arbitration body would rely on trained and qualified panels of arbitrators from which litigants can chose. These would be responsible for all the administrative aspects of the arbitration process.

In drawing up the framework for the horticulture sector arbitration body, one should form a task force from the onset that includes representatives from the relevant sectors, specific professional associations and members of farmer associations. The task force should be supported by relevant technical assistance in developing the arbitration framework. The most important elements of the framework would include establishing the rules to be followed, the model arbitration clause for contracts, the procedures for appointing arbitrators in the case of conflicts, the distribution of the costs of arbitration among disputing parties, and the time frame for settling disputes.

The IFAD country representative is well placed to engage in high-level policy dialogue with professional associations, farmer associations and the government to move this issue forward and coordinate inputs from experts to assist in formulating the legal framework.

Land tenure. Current land rental charges are determined according to the value of the crops being produced. This exploits those farmers who are taking additional risks to produce high-value crops. This is particularly harmful to landless smallholders, who often do not have any income-generating alternative other than rented land. Such tenants often choose labour-intensive crops with high returns, maximizing the use of household labour, which is a sensible choice, but, because of the payment structure, it is costly for the tenant.

To protect tenants, particularly landless smallholders, it is important that a land rental system be developed based on the productivity of the land and not on the effort and risk taken by tenants in growing high-value crops, which are also associated with high risks. The system should also ensure that tenants can rent the land for several years rather than the current system in which landlords can terminate lease agreements after only one season.

The IFAD country representative should approach the relevant Government authority to offer assistance in preparing a technical study to be used in high-level policy dialogue with Government policymakers. The study should use a consultative process that involves workshops for relevant stakeholders. At the workshops, findings and recommendations could be discussed and agreed upon. Finally, the technical study should be presented to a broader forum, including parliamentarians and policymakers in the executive branch. Based on the outcome of the broader consultation, IFAD should assist the Government in drafting the necessary legal document for parliamentary and governmental deliberations.

Air cargo-handling. The current framework for horticulture cargo-handling at Cairo International Airport has reached its limit in export volumes. Meanwhile, stakeholders believe that air freight is 30-50 per cent more expensive at the airport relative to fees in competing countries. Only one company is licensed to handle horticultural produce. This is thought to be the main cause of the relatively high freight costs. The cargo space on passenger planes out of Cairo airport is fully utilized, and there are restrictions on exporters hiring cargo planes directly. These are the limiting factors on the volumes being exported from Cairo airport.

IFAD should champion a study on the economic implications for the horticulture sector if the competition in cargo-handling is improved and exporters are allowed to charter cargo planes directly that have landing rights at Cairo airport. If the findings of the study support the suggested improvements, a policy paper on the issue should be prepared and subsequently used to engage in policy dialogue to promote the necessary changes.

Investment incentive system. The enormous post-harvest losses of horticultural produce amount to the equivalent of 11 per cent of Egypt's total plant production. To reduce these losses, it is recommended that IFAD offer to assist the Government in developing a tax incentive package that encourages businesses to invest in cold chains for horticultural produce. The tax incentives should favour investments situated within the rural area where the horticultural commodities are produced and produced, and aim to improve the possibility for smallholders to participate in supplying the domestic and export value chains.

Government involvement in professional associations. The Government and international donors have provided significant technical support to a number of professional horticulture associations in Egypt. Despite their youth, these associations have been influential in developing the sector. However, the Government's support for the Union of Producers and Exporters of Horticultural Crops is viewed as a conflict of interest because the union is perceived as a Government apex institution for all horticulture professional associations, as well as for farmers,

processors and exporters. This is so because the union chairperson is appointed by the Ministry of Agriculture and Land Reclamation, the union is housed within the ministry, and the union receives financial and technical support from the ministry. This situation actually places a damper on the activities of purely membership-based associations, particularly in regards to advocacy. The Government should make the union part of the ministry or provide purely hands-off support that cannot be misconstrued as a means to control professional associations.

Civil societies

Farmer associations. CDAs and farmer associations appear to represent a good starting point for contract farming. However, once the initial experience in working as a group has been gained, development efforts, including those of IFAD's Upper Egypt Rural Development Project, should assist smallholders to form independent registered farmer associations and cooperatives. This would ease the logistical problems involved in GlobalGAP auditing and organic certification and make it easier to integrate farmer associations vertically with exporters. SEDO financial partners would allow farmer associations to obtain loans on behalf of members if each association provides joint and several liability and if exporters agree to pay the farmer association accounts with the respective banks.

Professional associations. IFAD should assist the Government in developing a competitive grant scheme making grants available to professional associations and their members in support of export-promotion activities that would widen the currently narrow concentration of exports to only a few EU countries. IFAD should provide assistance to relevant professional associations in establishing sales organizations for members so as to encourage importers to meet all their needs through individual shops instead of dealing with many individual exporters.

Research and development

Financial support in the form of competitive grants should be established to foster public-private research partnerships in the development of the following:

- The screening, adoption and development of new varieties, for example, tomatoes resistant to yellow leaf curl virus, potato varieties resistant to brown rot, and fine green bean varieties. The development of new varieties that address market demand would increase Egypt's exports of horticultural produce. IFAD should assist the Government in developing a competitive grant scheme that would support innovative methods for screening, adopting and developing new varieties.
- Small (1/2 to 1 feddan) drip-irrigation systems should be tested, modified and adopted to cater for horticultural and other crops and perform the relevant financial and economic analysis for adaptation by smallholders. Drip irrigation would reduce water consumption by up to 50 per cent and, at the same time, increase yields by 30-50 per cent. These indicative improvements suggest that it would be economically viable for smallholders to upgrade their irrigation systems.

Investments

Seaport upgrading. Basically, all refrigerated sea containers are shipped from Alexandria port. To handle the additional refrigerated freight, the cargo-handling capacity of the port needs to be upgraded. With the expected increase in the production and export of horticultural produce from Upper Egypt, it will become attractive to use the Read Sea ports because this will help bring down the road transport cost to Alexandria. However, for this to occur, the capacity of the port to handle refrigerated sea containers also needs to be upgraded.

IFAD should offer to help the Government undertake a feasibility study on upgrading the logistics in handling refrigerated sea containers at the two seaports and, if found to be feasible, formulate a project and seek cofinancing from the Organization of the Petroleum Exporting Countries and other potential cofinanciers, for example, the EU and the World Bank.

Smallholders. The initial investment, which can be financed through IFAD and other donor interventions, should be production-oriented. However, once the farmer associations have matured into specialized associations and are legally registered, the financing of investment should also focus on the following:

- Row and high tunnels;
- Drip-irrigation equipment suitable for smallholders;
- Field packaging sheds; and
- Pre-cooling and refrigerated transport for larger farmer associations and cooperatives.

It is recommended that the Government encourage the development of financial service projects to address the above types of investments.

SMEs. The SMEs that are most suited for dealing with smallholder issues are the ones located within the rural area in relatively close proximity to the smallholders, including satellite facilities of existing metropolitan-based exporters and processors. Start-up exporters and processors are also more likely to penetrate new markets, particularly those in the EU. The investments envisaged for the SME sector include the following:

- Refrigerated cold-chains;
- Processing facilities;
- Facilities producing packaging materials;
- Professional nurseries; and
- Business development services.

Organic farming. Organic farming has a huge potential. To develop the subsector, it must benefit from exporters and processing facilities situated close to smallholders so as to ensure that technical issues are addressed and that produce that does not find an export market is sold to supermarkets and the tourist industry. To attract young entrepreneurs to engage in the export of organic horticultural produce, it is recommended that IFAD assist the Government and professional associations to prepare relevant investment prospectuses for potential exporters and processors of organic produce.

Annex 1
Economic development indicators

Economic development indicators	Year 2005
Agricultural land (% of land area)	3.54
Agriculture, value added (% of GDP)	14.92
Births attended by skilled health staff (% of total)	74.2
Exports of goods and services (% of GDP)	30.34
Fertility rate, total (births per woman)	3.1
GDP growth (annual %)	4.5
GNI per capita, Atlas method (current US$)	1 250
Gross capital formation (% of GDP)	17.98
Industry, value added (% of GDP)	36.07
Inflation, GDP deflator (annual %)	6.18
Life expectancy at birth, total (years)	70.53
Literacy rate, adult total (% of population aged 15 and above)	71.41
Population growth (annual %)	1.9
Poverty headcount ratio at national poverty line (% of population)	..
Time required to start a business (days)	22

Source: World Bank.

Annex 2

Poverty indicators

Region	Governorates	Total population ('000)	Rural population (%)	Share in total poor, %		Human development index	Adult literacy rate, +15	Infant mortality, per 1,000 live births
				Urban	Rural			
Metropolitan Egypt	All	12 181	-	3.5	-	0.765	85.4	29.9
Lower Egypt		29 152	71.1	5.4	10.5	0.666	68.06	18.1
Upper Egypt	All	25 018	68.7	22.5	33.7	0.653	59.7	29.2
Northern Upper Egypt	Giza	5 426	40	9.43	16.95	0.694	75.2	17.7
	Beni-Suef	2 161	77	32.35	51.66	0.621	54.3	31.5
	Fayoum	2 320	78	19.76	34.27	0.603	50.5	26.9
	Minia	3 874	81	9.12	24.03	0.618	52.2	33.4
	Assiut	3 280	73	39.21	56.76	0.618	52.2	42.5
Southern Upper Egypt	Sohag	3 654	78	35.61	41.09	0.618	52.4	32.6
	Qena	2 820	79	13.30	24.85	0.618	52.9	29.1
	Aswan	1 077	58	18.33	18.81	0.696	74.3	28.1
	Luxor	406	54	25.35	34.80	0.646	64.3	27.7
Border areas	All	950	43.4	3.6	17.7	0.708	74.3	21.2
Egypt	All	67 301	58	9.21	22.07	0.687	69.4	24.5

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