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A Strategy for

Agribusiness Investment Promotion

in Jordan

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Table of Contents

Executive Summary i

1. Introduction 1

2. The Potential for Increasing Fruit and Vegetable Exports 1
   - 2.1. Organization and Performance of the Sector 3
   - 2.2. Favorable Trends and Opportunities 4
   - 2.3. Challenges to Expanding Global Markets 5
     - 2.3.1. External Factors affecting Exports 6
     - 2.3.2. Domestic Policies and Practices Affecting Export Opportunities . . . 6
   - 2.4. A Vision of Jordan's Future Fruit and Vegetable Export Sector 11

3. Investment Opportunities 13
   - 3.1. Improved Export Performance Through Vertical Linkages 13
   - 3.2. Government Support for Private Sector Growth 15

4. A Strategy for Investment Promotion 16
   - 4.1. Phase One: Making Jordan More Attractive to Investors 16
   - 4.2. Phase Two: Attracting International Partners for Technology Transfer and Market Access 16

Appendices 18
   - Appendix One - Investment Profiles 19
   - Appendix Two - Sources of Investment from the United States 21

Executive Summary

The markets for high value horticultural products are evolving into a globally integrated network. Most destination markets are being served on a year-round basis with produce from all points on the globe. Jordan has unique opportunities for exploiting international trade in fruits and vegetables. To take advantage of these opportunities Jordanian enterprises must be effectively linked to this global network. Experience in several developing countries indicates that effective participation in the global marketplace can be achieved through strategic alliances, joint ventures, and other forms of resource pooling. Such forms of international investment are important means for accelerating the integration of the Jordanian fruit and vegetable sector with the global economy.

Despite Jordan's apparent advantages in producing high value fruits and vegetables for export markets, Jordanian farmers and exporters are not yet exploiting these advantages fully. This report presents a strategy for increasing investment in Jordan's fruit and vegetable exporting enterprises. Increased domestic and foreign investment in the fruit and vegetable exporting sector is a means for increasing the sector's contribution to the national economy in terms of value-added, export earnings and employment generation.

The Investment Climate

Although Jordan has taken significant steps toward opening its economy to international market forces, a variety of macroeconomic weaknesses hinder export expansion, particularly in the agricultural sector. For example, the effect of appreciation of the real exchange rate has been to increase the domestic costs of production and reduce the profitability of exporting activities. Such appreciation is the result of capital flows from aid, remittances and capital from returnees which occur in the presence of a restrictive trade regime. Such conditions imply reduced international competitiveness for horticultural exports. The implied loss of competitiveness cannot be permanently corrected with nominal devaluations of the Jordanian Dinar (JD). Export competitiveness could be improved with a more flexible trade regime and a broader tax base.

Jordan's labor is costly relative to productivity, particularly in comparison with countries with which it competes in international agricultural markets. Additionally, the fruit and vegetable export sector must overcome significant transport and infrastructure bottlenecks in reaching the markets in Europe and the Gulf.

The policy environment and the transport and infrastructure bottlenecks not withstanding, the fruit and vegetable export sector has substantial potential to increase its participation in international markets. Its principal assets are the favorable climate and geography which allow Jordan to produce and export profitably to several destination markets from October to June. This ability to participate in the global marketplace over an extended season gives Jordan the opportunity to become a reliable supplier of high value horticultural exports. Jordan's potential in this area has yet to be realized. It will require increased private

investment in the sector to improve product quality in all phases of the agribusiness system-from production to post-harvest handling, packaging, and distribution.

The Fruit and Vegetable Export Sector

Jordan's fruit and vegetable export sector is small relative to the rest of the economy and to the export sectors of neighboring countries with which it competes for international trade. Over the past ten years its performance has declined. Within the sector, firms are small and segmented. Typically, they perform a single activity within the industry, e.g. farming, exporting or concentrating on the local market. In other countries with successful agribusiness sectors, a single firm will have interests in farming, packing, transporting and merchandising to several domestic and international markets. The current small size of agribusiness firms inhibits the sector's presence in international markets and reduces the likelihood of increased foreign investment in the sector.

Segmentation of the production, post-harvest handling and packaging process has led to problems of produce quality. Jordan's farmers can grow good quality fruit and vegetables but inadequate post-harvest handling of the produce results in damage and spoilage during transport to the Amman Wholesale Market. Post-harvest handling, sorting, cooling and adequate packaging does not usually occur until after the shipment has reached the Amman Wholesale Market. At this stage, product quality has already started to deteriorate and it proves very expensive if the produce is rejected at the final destination. For a variety of reasons, farmers have little incentive to ensure adequate post-harvest treatment of their produce. Most farmers sell their produce to the Amman Wholesale Market where the entire crop will be purchased regardless of its quality. Market prices are kept artificially low through regulatory mechanisms and premiums are not received for higher quality produce. In addition, linkages between farmers and exporters are not common. If more such relationships existed, all parties would have more of a stake in the quality and value of the produce from harvest to sale in European or Gulf markets.

Jordan's fruit and vegetable export businesses can be profitable, but are not overwhelmingly so at present, because profit margins can be eroded very quickly by risks associated with the marketing and distribution system. The size of the export firms in the agricultural sector and the lack of vertical integration among producers and distributors combined with the high risks in the transport and distribution systems have left the agricultural sector unattractive in the eyes of local investors. Although investment capital is available in Jordan, fruit and vegetable exporting and distributing firms have been unable to tap into these funds for expansion.

The primary export market for Jordanian produce remains the Gulf. This marketplace can be a source for significant growth for the sector. To achieve this growth an entrepreneurial perspective is required to establish a predominant position in these markets. It cannot be assumed that these markets will take Jordanian produce of lower quality. Jordanian entrepreneurs must explore ways of serving the higher ends of this market rather than the traditional approach of selling surpluses to these markets. A strategy for developing and

sustaining reliable supplies of high quality produce for the European Union (EU) would also further develop the more profitable and higher volume market in the Gulf. The economic consequences of marginal improvements in serving the Gulf market could be greater than major breakthroughs in the EU market.

Investment and Joint-Venture Opportunities

The opportunities for investment in Jordan's horticultural export sector center on enhancing and preserving the quality of the products which can be exported profitably to all markets. Under current macroeconomic conditions there are several products which can be exported profitably to Europe and the Gulf. These products include table grapes, strawberries, fresh green beans (haricots), eggplant (aubergines), a variety of peppers (including capsicums), asparagus, cut-flowers and a selected number of tree fruits.

There is ample irrigated land and greenhouse capacity as well as technical capability to significantly increase the output of high-quality, exportable produce. However, there are two major problems to overcome. One is a management and organizational problem related to the structure of the sector and the lack of business linkages in the agribusiness system. The other relates to air transport and the lack of a complete "cold-chain" in the post-harvest handling system. The risks associated with the air transport system will be ameliorated with the construction of a cold storage transit facility for fruits and vegetables at Queen Alia International Airport. Private investments in the post-harvest handling system can lead to improved vertical integration of the agribusiness system. Increased investment is required for the formulation of vertically integrated export marketing firms that can provide the following functions:

1. Contract farming arrangements with multiple farmers in several regions to insure a steady supply of high quality products.

2. Post-harvest handling to preserve product quality including: sorting, pre-cooling, and modern packing facilities near to growing areas to improve the quality of output.

3. Refrigerated transportation and holding before shipment to export markets.

4. Improved commercial presence with major buyers in the destination markets based on sound business practices and long-term mutual commitments.

These four functions require significant increases in the capitalization of existing firms or the entry of larger new firms or both. Increased capital is required primarily for funding advances and payments for farmers under contract arrangements and for financing recurrent operating costs in the post-harvest and distribution functions. There are also opportunities to invest in new plant and equipment in the post-harvest handling system. Investment is also required in acquiring technical expertise and proprietary technology from abroad. The need for substantial increases in working capital must be met from domestic sources before

international agribusiness firms will become interested in providing technology (materials, equipment and know-how) for joint-ventures with Jordanian firms. At the present time it appears that the best opportunities would exist in joint-ventures where the international firms provide technology and market access and the Jordanian firms provide liquidity and production capacity.

A Strategy for Increased Agribusiness Investment

The suggested strategy is a two-step process. The first phase is to prepare Jordan's horticultural export sector, on a firm and sectoral level, to attract investment. The second phase will seek international firms to fill specific market access and technical needs that have been identified in the first phase.

Specific elements of the **first phase** of the strategy include:

1. Use the newly formed exporters' association to address policy, investment and business climate issues. The association will encourage more cooperation between different levels of the agricultural export business and facilitate the solving of problems that are too big for any individual firm to overcome.

2. Tap into the substantial domestic investment resources that are already available in Jordan through promotion of joint and co-ventures among Jordanian farmers, exporters, service firms, and financial firms.

3. Encourage the formation of vertically integrated agribusiness firms that engage in contract farming with farmers so that a single firm handles a whole crop and is able to add value from the harvest point onwards. The firms would sort the produce in the field into European, Gulf and domestic grades and ship to all three markets.

The following activity would constitute the **second phase**:

1. Identify prospective investors. The international firms most likely to be interested in a joint-venture or investment are those that produce or sell agribusiness-related technology and have a presence in the European fruit and vegetable markets. These firms may be interested in providing planting materials, supplies and equipment to Jordanian firms and be willing to contribute technology as their investment in joint-ventures in Jordan. They would take payment in profits on delivery of goods to the export markets. Additionally, there may exist a small number of international firms that would seek to enter the Gulf markets in partnership with Jordanian firms.

We recommend that all elements of the first phase be well established before any intensive efforts begin on the second phase.

1. Introduction

This report presents a strategy for increasing investment in Jordan's fruit and vegetable exporting enterprises. An expanding fruit and vegetable export sector could improve Jordan's persistent balance of trade difficulties and increase incomes and employment in the agricultural sector. At the same time, expansion of fruit and vegetable export enterprises would be expected to enhance efficiency in the use of scarce water and land resources. The strategy presented in this report is part of a continuing effort under the Jordan Agricultural Marketing Development Project (JAMDP) which is sponsored by the United States Agency for International Development and the Hashemite Kingdom of Jordan. The venue for the project is the Agricultural Marketing Organization (AMO), an autonomous entity of the government under the purview of the Ministry of Agriculture.

After a brief overview of the fruit and vegetable export sector, an assessment is made of domestic and external trends that are favorable to expansion of the sector and of constraints and problems that must be overcome in expanding Jordan's participation in international markets for fruits and vegetables. This is followed by a discussion of strategies for promoting investment as a means of exploiting opportunities for increased participation in global markets.

This report was prepared after a visit to Jordan by the senior author. During the time in Jordan, several firms and individuals engaged in production and/or trading of fruits and vegetables were visited in an effort to identify the opportunities and impediments to improved performance of the sector. The assessments and opinions expressed in this report are the responsibility of the authors alone and should not be attributed to any of the sponsoring and cooperating institutions nor to any of the individuals that provided information.

2. The Potential for Increasing Fruit and Vegetable Exports

Jordan has apparent advantages in producing high value fruits and vegetables for export markets in several regions. A principal advantage is its lengthy growing season. The growing season in Jordan is longer than expected given its temperate zone location (31° North, about the same as southern Spain), because the Jordan Valley is more than 200 meters below sea level. The valley's low elevation contributes to its higher temperatures and the long growing season which includes the fall and winter seasons for the Northern Hemisphere. Additional production can also be obtained from the higher elevations during the spring and summer so that Jordan's fruits and vegetables can be harvested year round. This is a distinct advantage in the emerging global marketplace for fresh horticultural products. Furthermore, much of the production in the Jordan valley and in irrigated highland areas is achieved under plastic greenhouses and through drip irrigation. These practices allow farmers a greater degree of control over planting periods and other climate-related aspects of production. These conditions are the foundation of a modern agribusiness system that can produce and market high value horticultural products for sale in the most demanding markets.

While these advantages have been amply documented by the Jordan Agricultural Market Development Project, the World Bank, FAO and others, Jordanian farmers and exporters are not yet exploiting them fully. The JAMDP is addressing key constraints regarding export promotion, post-harvest technology and infrastructure with technical assistance and information. In this report we focus on increased domestic and international investment in the sector as a means for more fully exploiting the potential for increased horticultural exports.

Throughout the world, the markets for high value fresh horticultural products are evolving into a globally integrated network. Most destination markets are being served on a year-round basis with produce from all points on the globe. Jordan has unique opportunities for exploiting this emerging arrangement for trade in fruits and vegetables. To take advantage of these opportunities, Jordanian enterprises must be effectively linked to this global network. Experience in several developing countries indicates that effective integration into the global marketplace can be achieved through strategic alliances, joint ventures, and other forms of resource pooling.

Economic analysis undertaken by Harrison and Jabbarin for the JAMDP and a recent review of prices in Europe indicate that several products could be exported profitably to the countries of the EU.[1] These products include, but are not limited to, asparagus, aubergines, capsicums, grapes, green beans, melons, and strawberries.

The above advantages and assets not withstanding, exports of fruits and vegetables from Jordan to all markets have been in a decline since they peaked in 1982. Exports peaked at 800,000 metric tons in 1982, and are currently below 500,000 metric tons with only 2,000 tons shipped to Western Europe annually. The reasons for the decline include both domestic policies and conditions in the destination markets in the Gulf and Europe.

Approximately 70,000 hectares of land are under irrigation, most of which are currently used for fruits and vegetables including tree crops. Tomatoes make up approximately one-fifth of the area in horticulture. This level of production is apparently sufficient to provide adequate supplies for the domestic market. In fact, current supplies are said to glut the domestic market[2], and farmers complain about low prices for their products. Jordan has the potential to double its exports of fruits and vegetables without affecting the domestic market in any detrimental manner.

Even with a five-fold increase in exports to Europe, the value represented (30 to 50 million U.S. dollars annually), would be a very small share of the EU market. Such an increase

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[1] Harrison, K. M. and Amer Jabbarin, "Evaluation of Economic Benefits of Horticultural Exports to Europe". Agricultural Marketing Project: Agricultural Marketing Association, 1991.

[2] Abt and Associates, "Jordan Agricultural Sector Review". Agricultural Policy and Analysis Project II. United States Agency for International Development, September, 1993.

would be large enough to be attractive to dealers in Europe, but not so large as to produce any price effects in the EU markets. Significant scope exists for increasing fruit and vegetable exports from Jordan to Europe and to other markets, including the traditional markets in the Gulf and the emerging economies of Central and Eastern Europe.

2.1. Organization and Performance of the Sector

The fruit and vegetable sector in Jordan is organized around the domestic market, and exports represent the surplus from this market. While a few firms are vertically integrated to serve specific export markets from production onwards, most firms in the sector are very small by international standards. The fragmentation of the market implies that few firms are able (or willing) to invest in appropriate sorting, cooling and packing facilities. Nor are firms willing to incur the additional costs of acquiring these services from third parties Most exporters buy produce at the wholesale markets. The produce bought at the wholesale market is sorted to extract the exportable quantities, and the residual is offered for resale in the domestic market. These arrangements are used primarily by the exporters that ship by truck to the Gulf and to Central and Eastern European countries. Exports to Western Europe are handled by vertically integrated firms or by exporters that have contract farming arrangements with producers. The quantities handled by these firms are small and their participation in EU markets is erratic or concentrated during brief seasonal peaks.

The produce in the field is of reasonable quality, but every step in the post-harvest process tends to remove quality with a concomitant loss of value from the harvest point onward. Two major problem areas exist. First, field heat is not removed from the harvested crop and the system does not currently operate a well integrated cold chain from the farm to the shipping point. Second, sorting and packaging for export do not occur near the harvest point and all produce receives equal treatment regardless of quality until late in the marketing chain. As a result, few quality preserving actions are taken in an opportune manner. The current system is costly and tends to reduce the quality of produce because the post-harvest methods are outdated. With limited exceptions, all produce is removed from the fields and greenhouses in polystyrene boxes that are too small. Packing boxes are overfilled and stacked up to ten high in unrefrigerated trucks. This causes mechanical damage to the produce enroute to the wholesale market. The post-harvest handling system must be reorganized to sort out the highest quality produce immediately after harvest. This would require operating sorting and grading lines near the farms and use of quality preserving methods for all produce destined for export markets from the earliest point forward.

While existing production technologies and farmers' knowledge of these technologies is adequate to produce export quality produce, the organization of the system is such that the incentives for appropriate handling and packaging are not effectively transmitted. These conditions exist because the wholesale markets are administered under a price stabilization mechanism that seeks to protect domestic consumers from sharp price increases. An unintended effect of this arrangement is to insure that the market fails to reward quality and reduces all produce to the lowest standard. Apparently, the Gulf markets do not reward

quality either, and the produce handled through this system is readily accepted in the Gulf markets and some of the emerging economies in Eastern and Central Europe. Exporting to the EU market is viewed as too costly and risky, whereas serving the emerging markets of Eastern and Central Europe is considered less risky.

Marketing costs to Western Europe which include air freight expenses are double the marketing costs to Central and Eastern Europe via land transport. The costs for serving the Gulf are even lower. Serving the EU involves air freight and higher packaging and post-harvest costs and is made more risky by the unreliability of air transport from Amman. Delays in flight departures or flight cancellations can cause the loss of all of a particular day's shipment or severe reductions in product quality at the destination. Our calculations suggest that the margins for the EU under optimal conditions are approximately 30 percent of the value of the produce at the first receiver in the destination country. These are rapidly eroded if delays cause the price to be discounted for poor quality. If a whole shipment is lost as a result of flight delays and cancellations, five normal shipments would be needed to recover the loss.

Another drawback of current Jordanian marketing operations through the wholesale market is that when prices are good in the EU, exporters compete with each other at the wholesale market to bid up the available produce. Serving the EU market effectively will require specialization by vertically integrated firms capable of sorting their top quality produce in the field and selling the residual at the wholesale market. At the present time, the structure is inverted, and the EU market is served on a haphazard basis. This practice keeps Jordan from establishing itself as a reliable and consistent supplier of high quality produce to the EU. As a reflection of these conditions, Jordanian produce is often discounted for poor quality and the importing firms often delay payments to the Jordanian exporters. Not surprisingly, Jordanian exporters complain of poor business relationships with the EU importers.

2.2. Favorable Trends and Opportunities

The globalization of trading in fresh fruits and vegetables has tended to dampen price fluctuation in the major consumption centers of Europe, North America and Asia. These markets are being served with an ever increasing array of high quality produce from the most distant points on the earth. For example, Chile, South Africa, Australia and New Zealand have been major suppliers during the Northern Hemisphere's winter months. More recently countries in South Asia, tropical Latin America and Africa have entered the global market as year-round suppliers.

Most small countries have opportunities to participate at the prevailing market prices if they can ship high quality products over an extended period of time. Under these conditions, each small country is a price taker (i.e. its supplies do not affect the prevailing market prices), and the strategy for firms in each country is to profit from the continual participation in export markets and not attempt to "hit" any one market at the peak. Jordan's extended growing season makes it an ideal candidate for such participation. The major requirement for

exploiting these opportunities is the timely and continuous delivery of high quality produce to each destination.

Jordan has opportunities to ship overland to its neighbors and to Central and Eastern Europe. Western Europe must be served by air, and there is presently no opportunity to use ocean-going freight for fresh products. Within this report we emphasize the opportunities to expand air shipments to Europe. As Jordan improves its ability to serve the EU by air, it will enhance its ability to serve new markets e.g. Asia and North America, and to expand into the high quality segments of the Gulf and other European markets.

As the process of globalization of fresh fruit and vegetable markets evolves, specialization of large multinational agribusiness firms into marketing and distribution functions is increasingly likely to occur. These firms now concentrate on seeking reliable commercial deals with producers and shippers from all regions of the World. As Jordan's capacity to deliver high quality produce on a sustainable basis grows, Jordanian firms will be able to establish long-term relationships with these globally-oriented marketing firms.

Jordan has the natural resource capacity to expand its participation in the global marketplace for fruits and vegetables. It needs to exploit these international trends by enhancing the performance of its agribusiness system through improved organization and management and through the acquisition of modern technology and knowledge.

The public sector capacity to supply generalized information and knowledge is being enhanced through the JAMDP and AMO, along with other significant public sector initiatives to support the modernization of agriculture such as improved water resource management. The private sector is also working to modernize. Individual firms are seeking new markets and products along with the technologies with which to produce and market. The recently created association of fruit and vegetable exporters with the participation of a wide array of private entrepreneurs including farmers provides the vehicle for collective action by the private sector in seeking market information, broad- based technical and business assistance and policy and regulatory reform. As a result Jordan now has the opportunity to develop an efficient division of effort between the public and private sectors and within the latter an efficient division of effort between the collective interests of the sector and the business interests of each firm. With these resources in place, there is now the opportunity to expand the sector through increased private investment from domestic and international sources.

2.3. Challenges to Expanding Global Markets

At the present time, however, there exist a number of external factors and numerous domestic policy and business practices that have reduced the potential for increased fruit and vegetable exports from Jordan. Some of the external impediments are the result of changes in the destination markets and have affected trade opportunities for Jordan's fruit and vegetable exporters and presented new challenges to be met. The major challenges are those internal to Jordan regarding the policy and regulatory environment as well as private business practices.

2.3.1. External Factors affecting Exports

Among the major external problems currently faced by the sector are the prolonged recession and persistent unemployment problems in Western Europe, the halting emergence of Central and Eastern European free market economies, recession in the oil-exporting countries of the Gulf, and the political and economic consequences of the Gulf War. These conditions have had a disproportionately depressive effect on market prices for fresh fruits and vegetables because these products have typically been purchased by consumers only after more basic consumption needs are met.

In addition to the depressive effects of economic conditions in destination markets, Jordan's exporters are facing increased foreign competition as a result of the aforementioned globalization of trade in fresh fruits and vegetables. Notably, Latin America has increased its participation in world markets for fresh fruits and vegetables, and South Asian and African countries are significant new entrants into these markets. Jordan's traditional competitors from the Mediterranean basin also continue to expand their presence. Consuming countries now have more choices throughout the year, and market prices tend to be lower and less variable throughout the year. The older, traditional strategy of exploiting seasonal windows of opportunity is no longer available to Jordan, because the windows of peak prices are likely to be less predictable if they exist at all.

In short, while its climatic and locational advantages remain an asset, the comparative advantages given by these factors have been severely eroded by the emerging conditions in the global marketplace for fresh fruits and vegetables. The most successful players in these markets today are those countries and enterprises that can consistently supply reliable volumes of high quality produce over a prolonged season. In this regard, Jordan's ability to produce over a long period of the year remains a distinct but as yet unexploited advantage.

2.3.2. Domestic Policies and Practices Affecting Export Opportunities

In addition to the depressed conditions in external markets, enterprises that export high value fruits and vegetables from Jordan are hampered by transportation problems, an inadequate infrastructure and a policy and regulatory framework that includes:

1. An economic incentive regime that favors imports and import-competing activities and domestic services over export-oriented activities.

2. An erratic administration and regulation of trade flows that increases the risks faced by export-oriented enterprises.

3. Capital flows that cause appreciation of the real exchange rate and reduce competitiveness for exporting activities.

4. A rigid labor market that causes lower productivity than would be expected given the abundance of trained persons.

5. The pervasive role of government in food and agricultural markets that reduces incentives for efficient resource allocation in the agricultural sector.

In this section, we examine each of these domestic constraints in greater detail.

Transportation and Infrastructure Problems

Transportation problems and inadequate post-harvest infrastructure hamper the ability of the sector to serve international markets. As noted earlier, air transport to the EU is costly and unreliable. Overland transport to other markets is also problematic. Poor political relationships with Saudi Arabia and Kuwait have closed off these markets, and in the case of Saudi Arabia has created problems for the shipment of produce to other Gulf states. Shipments to Iraq are forbidden by the United Nation's economic embargo. Shipments to Central and Eastern Europe often face unnecessary delays at the intermediate borders. The lack of back-haul loads from these markets also increases the cost of serving them.

In the United States and Europe, consumers are becoming increasingly concerned about the use of pesticides and the presence of pesticide residues in agricultural products. In Jordan there is evidence that farmers misuse pesticides. Consignments of fresh fruits and vegetables to Europe have been rejected because of high residue levels. At present there are no suitable laboratories in Jordan to test for residues. It is likely that the EU will introduce uniform residue tolerance levels, the imposition of which threatens all of Jordan's exports to Europe.

Restrictive Trade Policies

Jordan has made great strides in opening its economy to international market forces and to international trade and investment. Significantly, its capital market is open to international transactions. Jordanians and foreigners can own deposit accounts denominated in international currencies and the JD is freely convertible into these currencies. International investors' rights to repatriate their investments or profits are protected by law, and foreigners can own 100 percent of the share capital in companies in manufacturing, tourism, housing, health and agriculture. In other economic sectors, 51 percent of the ownership must be Jordanian. The "Encouragement of Investment Law" has been revised to provide tax and duty exemptions to specific pre-approved investment projects.

Even though economic policy has tended toward greater flexibility in the last five to ten years, the regulatory policy framework retains certain features that inhibit export-oriented activities. By direct and indirect interventions, trade policy affects the flow of goods in ways that are not consistent with an open and flexible economy. For example, the trade regime seeks to protect domestic manufacturing and other sectors from competition from imports. It does this by erecting tariff and non-tariff barriers, including quotas and prohibitions on trade

in specific items that are imposed in an ad-hoc manner.[3] In fact, a protective import policy is offered as an incentive for international investors.[4] These types of trade interventions tend to hurt agriculturally-based exports, because they can cause appreciation of the real exchange rate and a concomitant loss of competitiveness for agriculturally-based exports. Furthermore, they tend to channel the flow of investment capital into the protected sectors and away from the export-oriented activities.

Exchange Rate Appreciation

Other forces besides trade policies can cause the prevailing exchange rate regime to reduce competitiveness for exporting activities. A significant factor in Jordan is the persistent inflow of international aid and worker remittances, as well as the more recent repatriation of capital by the returnees from the Gulf. These capital inflows can cause appreciation of the real exchange rate and hence a loss of competitiveness to exporting activities. The real estate and construction boom of recent years is evidence that such appreciation has occurred in spite of efforts to maintain a flexible exchange rate regime that is responsive to market forces. While the prevailing currency prices reflect supply and demand conditions in the market for foreign exchange, the equilibrium thus achieved reflects higher prices for non-tradable goods and services such as real estate and commercial services. The effect of this on agricultural exports is to increase the domestic costs of production and to reduce profitability of exporting activities.

Higher prices for domestic services and other non-tradables relative to the prices of exportables will persist as long as the trade regime protects import-competing activities and the capital markets remain more open than the goods markets. Such conditions cannot be permanently corrected by a nominal devaluation. Paradoxically, trade reforms that facilitate importing also stimulate the exporting sectors. What the exporting sectors of Jordan require is increased openness in the trade regime by reduction of tariff and non-tariff barriers to imports. Increased openness to imports reduces the harmful effect of capital inflows on the real exchange rate, because the international capital would be spent on internationally tradeable goods and not on non-tradeable services.

Administration of Trade

Streamlining administrative procedures for importing and exporting would further enhance Jordan's fruit and vegetable exporters' chances of competing in the global marketplace. Currently, the administration of trade remains cumbersome. For example, export licenses for

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[3] For example, trade in apples and other tree fruits with neighboring countries (Lebanon) is governed by quotas and periodic import prohibitions that seek to protect domestic producers. In the long run these policies will work against domestic producers because they will prevent their entry into export markets.

[4] A promotional bulletin of the Jordan Industrial Estates Corporation (1993) states that investors are protected in Jordan through high duties on luxury *and imported goods that can be produced locally.*

agricultural products are granted on a case-by-case basis, presumably to maintain close control on the food security situation. At least six documents are required and six agencies are involved in approving export shipments from Jordan. Delays in obtaining these documents and the implied clearances can cause fresh produce to be delayed in transit from the farm to the destination market.

Restrictive Agricultural Policies

Domestic agriculture policies also inhibit the development of a dynamic horticultural exporting sector. For example, Jordan suffers chronically from an oversupply of tomatoes because the parastatal Agricultural Marketing and Processing Company (AMPCO) absorbs surplus production by processing these tomatoes into tomato paste. AMPCO's cost of production for tomato paste is 30 percent to 50 percent higher than the world market price for this commodity. However, as long as AMPCO stands ready to buy the surplus tomatoes, farmers are unlikely to risk money and effort by shifting from tomato production for the domestic market to producing products for export markets where prices and profits are not guaranteed. As noted earlier, control of wholesale prices at the Amman and other major wholesale markets acts as further disincentive to quality differentiation and deters farmers and exporters from investing in technologies and practices that would enhance quality and increase international marketability of Jordanian produce.

Further evidence of the impact of agricultural policy constraints on the growth of export-oriented agriculture is the stagnation of agricultural exports at the same time that Jordan has experienced a major construction boom. While other sectors of the economy such as the pharmaceutical and medical supplies processing industry have expanded as a result of favorable policy treatment, the export-oriented sector of agriculture has failed to thrive during a period of increased availability of private investment capital within the country.

The foregoing all imply that the sector must be made more attractive through specific, economy-wide policy reforms. Central to this process would be a further liberalization of the policies and administrative regulations affecting imports and exports from all sectors. Efforts to correct balance of payments problems with import restrictions have had the deleterious indirect but important consequence of reducing export activities.[5]

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[5] Franklin and Valdés (1993) demonstrate that a trade policy regime such as prevails in Jordan today can be detrimental to both producers and domestic consumers of the exportable agricultural commodities, because the resulting increases in the relative prices of non-tradables cause increases in the domestic marketing margins. Franklin, D. L. and Alberto Valdés, "Trade Policies, Relative Prices, Real Incomes and Food Consumption in Perú". *The Bias Against Agriculture: Trade and Macroeconomic policies in Developing Countries*. International Center for Economic Growth, San Francisco, 1993.

Labor Market Performance

Another major concern that reveals inadequate flexibility in the economy is the performance of the labor market. Jordan is at once an exporter of skilled and educated labor while it is simultaneously an importer of low-skilled workers. The urban unemployment rate is reported above 20 percent, while over 20 percent of the labor force is made up of low-skilled migrant workers in agriculture, construction and domestic services. Such conditions reflect rigidity in the performance of the labor market and are consistent with an appreciated real exchange rate. The presence of high unemployment among skilled and educated urban dwellers suggests that these unemployed workers perceive the value of their time to be higher than prevailing wage offers from enterprises. Together with the need to import low-skilled workers, these conditions indicate that Jordan's labor is costly in terms of productivity, particularly in comparison with the countries such as Egypt with which it competes in international markets for fruits and vegetables. Under these conditions international investors would prefer Egypt to Jordan as a venue for their investments in horticultural exporting.

Management and Business Practices

Jordanian exporters complain of being at the mercy of European buyers in terms of prices received and promptness of payment. Jordanians also complain that their produce is often discounted because of its poor quality even if the produce was of high quality upon departure from Amman. These problems arise because Jordan is not a major player in these markets.

A number of strategies can be adopted to improve business relationships with the buyers and receivers of Jordanian produce at the destination markets. Jordanian export firms need to develop linkages with the top players in each destination market in which they want to operate. These top players will usually be the larger produce wholesalers in each market. Large wholesalers will initially be skeptical about including Jordanian firms among their suppliers, because they will doubt the quality and reliability of the Jordanian supplies. Smaller, less well capitalized operators are likely to be more willing to deal in Jordanian produce. However, these smaller firms add to the riskiness of the venture. The key to building a good business relationship with the larger, well established buyers in the destination markets is to fulfill any delivery commitments that are made to them. At a minimum, this involves these three steps:

1. Making realistic commitments for quantities to be shipped and the schedule for shipments.

2. Meeting quantity and quality commitments at all costs, including fulfilling commitments even if an alternative market appears more lucrative at a particular point in time.

3. Ensuring adequate capitalization of the Jordanian firm so that it can produce the necessary quantities of the highest quality produce on schedule. Adequate capitalization is also needed to insure that the highest quality supplies and processes are used in preparing each shipment for delivery. Short-cuts and skimping on costs for such processes as packaging, precooling, and icing can be counterproductive in the loss of confidence from the buyers.

2.4. A Vision of Jordan's Future Fruit and Vegetable Export Sector

To develop international trade in agribusiness and to attract foreign investment, Jordan needs to achieve a sound reputation in the international business community, maintain a flexible and neutral policy framework, develop a responsive private enterprise sector and implement a proactive and competitive approach in international markets. A business environment in which new and existing fruit and vegetable exporting enterprises could flourish would have these characteristics:

1. **Jordan would be seen as "friendly" to private sector investment and trade.** Domestically, an export-led strategy would be widely accepted as good for Jordan, and political leaders would express support for private initiatives in the fruit and vegetable export sector. Jordanian businesses would respect international contracts and intellectual property rights. Foreign investors and enterprises, including service firms, would be encouraged and placed on an equal footing with domestic firms. These features of the business environment would be reflected in streamlined administrative procedures for the regulation of investment, production and trade in fruit and vegetable exports, as well as in other business activities.

2. **The policy framework would be made more open, flexible and neutral.** Taxation would be broad-based and non-discriminatory across sectors of the economy, e.g. value added taxes would replace trade taxes. Capital, i.e. foreign exchange, would continue to be freely mobile internationally. Macroeconomic management would insure stability and the internal and external accounts would move toward a sustainable equilibrium. The financial sector would include greater private participation in the banking system, and a wide array of financial services such as factoring, leasing, venture capital, commercial paper, and trade finance instruments would be offered by non-banking financial enterprises. These activities would involve a higher degree of international participation. The trade regime would be based primarily on uniform and low tariffs, and exporting firms would have access to a complete system of duty relief mechanisms for their imported inputs, e.g. drawbacks, bonded warehouses, temporary imports, exemptions and extra-territoriality (privately run export processing zones). The labor market would be flexible to allow firms to expand and contract employment to meet market demands and seasonality of production and sales schedules; wages would be set to reflect labor productivity and labor supply. Private sector firms would be permitted to invest and operate in the

communications, transportation and infrastructure sectors with appropriate regulatory oversight.

3. **The private sector would respond to opportunities by investing, producing and exporting.** New firms would be formed, and existing firms would invest, produce and trade in fruits and vegetables of the highest quality. Domestic and international investment would increase directly and through financial intermediaries including participation in the Amman Financial Market. Private firms would pay their taxes and adhere to environmental, health and labor regulations to establish an ambiance of responsible corporate citizenship. Trade and business organizations would be sustained by their members in response to the relevance and value of their services. For example, the Fruit and Vegetable Exporter Association would become self sustaining.

4. **New markets would develop for Jordanian products, and new products and services would be developed for export.** Market information would be widely available for international and domestic products in which Jordan has competitive potential. Productivity would increase for all resources through technological innovation, investment and training. Jordan would receive better service from international air carriers, and the domestic and international communications system would improve. Air transport would operate under an open skies policy. Jordan would become an international trading service center for the region, i.e. the "Singapore" of the Middle East. A particularly important opportunity exists to provide trade and export services to the future Palestinian state to facilitate its access to all destination markets.

Today to some extent all the elements of this vision are missing. Official mistrust of international and domestic private enterprises remains. Much of the regulatory activity is directed at protecting the economy from the actions of private entrepreneurs. The gains in policy reform have yet to be consolidated into flexible capital, labor and product markets. Many of the enterprises in the formal sectors of the economy continue to depend on and seek official privileges. Neither the public sector nor the bulk of the private sector has information or skills to identify and develop international markets. These constraints can be overcome with an effective partnership between the private and public sectors. Working together, Jordan's exporters can become part of the emerging global markets for fruit and vegetable products. The investment promotion strategy outlined in the next section of this report is based on a partnership, between the public and private sectors, that will work toward achieving the foregoing vision. The newly formed exporters' association has the major responsibility in launching this partnership within a spirit of responsible citizenship. As the domestic policy framework improves and public infrastructure is developed to serve the private sector in an efficient and timely manner, the private enterprises will improve their business practices and technical capabilities. When the private and public partnership works to enhance the performance of the sector, Jordan will become increasingly attractive to international investors and partners.

The Jordanian private sector producers and exporters of fresh fruits and vegetables can now use their association to lobby for a more neutral policy and regulatory framework to place their sector on more equal terms with other economic sectors. The association can also serve as a clearing house for information and importantly as a source of technical and business assistance for improved management of the individual enterprises. When this vision is realized, through the required public/private partnership, Jordan will be attractive to domestic and international investors. As a result Jordan could experience an increase in the value of its horticultural exports in the order of $50 million, or at least $15 million increase in domestic value added per year.

3. Investment Opportunities

The marketing problems for Jordanian fruits and vegetables can be resolved through improved management and business practices. Increased domestic investment and international business alliances may then provide the resources and know-how needed to expand and improve the performance of Jordan's fruit and vegetable export sector. Similarly there are areas where the public sector can help stimulate growth by improving the business environment in terms of policy reform, regulatory efficiency, and provision of key public services.

3.1. Improved Export Performance Through Vertical Linkages

To gain credibility with buyers in the destination markets, exporting firms must meet delivery schedules with the stipulated quantities of the highest quality produce. To achieve this goal all decisions in the agribusiness chain have to be focussed on these criteria. To this end, a number of investments must be made to upgrade the agribusiness chain in Jordan.

As noted earlier, most produce farming operations are small by modern agribusiness standards. With the structure of land tenure as a given, vertical integration can be primarily achieved through contract farming arrangements between an export services firm and individual growers. Vertically integrated firms could be formed from partnerships among established participants in the Jordanian fruit and vegetable markets such as exporters and some of the leading growers. These new enterprises would require financial capital to acquire post-harvest handling equipment and operating capital to fund crops under production, inventories of packing materials, and accounts receivable from buyers. The financing for such vertically integrated firms would be raised in Jordan.

Alternatively, a Jordanian firm could seek an alliance with an existing dealer in a destination market or with a large firm trying to enter the particular market under consideration. For example, some of the larger US produce marketing firms may be interested in forming such alliances with Jordanian firms that can complement the American firms' sources of produce for new markets in Europe and in the Gulf. Larger firms from Asia, Africa and Latin America may be interested in obtaining produce from Jordan as a complement to their established sources of supply from other regions. Such alliances could be formed with larger

firms as part of the larger firms' entry strategies into new markets or with established firms in existing markets.

An alliance with a large international marketing firm would guarantee Jordanian access to the marketplace as well as assistance in kind in the form of packing materials and perhaps in post-harvest handling equipment. Under such arrangements, the parties would have to offer some form of "cross-border" financial recourse to each other to insure that the contracts were fully enforceable by each party in its own country. Under this latter arrangement it would still be very important that as much Jordanian capital be invested in the Jordanian venture as possible. The extent of the capitalization in Jordan would give the Jordanian firm bargaining power and, of equal importance, credibility.

Investment opportunities also exist for independent service firms that would offer harvesting, sorting, pre-cooling and packing services. There is a need to invest in packing and sorting equipment, cooling plants and ice making equipment, potable water systems for ice-making and washing produce, and refrigerated transportation. The formation of post-harvest and export services firms or contract farming arrangements between producers and existing exporters would meet this need. Such firms could operate profitably at several locations throughout the Jordan Valley and elsewhere. In fact, it may be desirable to provide these services with mobile equipment. This area of investment may present the best opportunity for joint-ventures with international firms in that an international agribusiness firm may be interested in providing the equipment and the concomitant technical assistance for a joint-venture with a Jordanian firm. Joint-ventures also offer the international partners the opportunity to safeguard proprietary interests they may have in specific technologies.

The concept of "joint ventures" in the agribusiness sector should not be confined to a partnership between a Jordanian firm and a foreign investor. Instead there are several forms of profitable partnerships that include firms from within the industry, combine Jordanian agribusiness firms with Jordanian firms from outside of the industry, join Jordanian agribusiness firms with international firms, and combinations of all three. The essence of the arrangements can be described as contract coordination.

Under contract coordination an operator at one stage of the process contracts to buy all or part of the output of an operator at the previous stage of the process. In the United States and Mexico, it is common for a grower to sign an exclusive marketing contract with the first receiver of his produce, such as the processor, wholesaler or exporter, for the duration of the season. The contracts usually have quality clauses and often have price guarantees. Some of the contracts stipulate inputs or processes to be used by the (for example) grower, and allow the buyer of the goods to inspect and monitor adherence to the stipulations. Under this arrangement the seller is able to secure a reliable purchaser of his produce. He also has a greater incentive to maintain or improve the quality of his output.

For the buyer, the benefits are a guaranteed source of product to meet his needs and also guaranteed quality. Under these arrangements the buyers will often market the contracted

product under two labels; a label for the top quality produce (in Jordan's case for marketing to Europe and the Middle East) and another label for the lesser quality output (in Jordan's case for sale on the local market).

It is common for the contracted buyer to advance funds to the seller to cover the marketing costs (such as harvesting, packing, transport and packaging), which are then deducted from the sales remittances to the seller. Ideally this method provides capital to the grower and secures the relationship. In Jordan the current operators in the growing and exporting stages would require financial capital from third parties.

3.2. Government Support for Private Sector Growth

Governmental agencies can enhance the business reputation of Jordanian fruit and vegetable exporting firms in a number of ways. Of primary importance is streamlining the procedure for documentation and clearance of export shipments. Licenses to exporters should be granted on a yearly basis, rather than on a shipment-by-shipment basis. Making the framework for trade administration more efficient increases the likelihood that Jordanian firms will fulfill their commercial commitments in a timely fashion. Currently, the risks and costs of bureaucratic hassles inhibit investment.

The performance of exporting firms in European markets could also be enhanced by provision of two other government or public sector services:

1) Pre-shipment inspection to certify quality.

2) Certification of produce that meets EU standards for pesticide residue tolerances.

Both services can eventually be provided by the private sector, but the private sector needs official support to initiate these services. For the present, the government, represented by the AMO, should work with the exporters' association to develop and enforce a set of simple quality standards for the principal products. The association could provide inspectors to be paid for with a check-off on each box of produce shipped. AMO would provide oversight for the administration of the standards.

Private sector investment in a pesticide residue testing service is not likely, because such services would be only marginally profitable as a private venture after a tenfold increase in shipments to EU. Even then it is not clear that private entrepreneurs would be willing to enter this area. Therefore, it appears that the only way these services will be provided in the near term will be through some form of government subsidy. Such a subsidy could be justified on economic grounds by the sectoral value added and the employment imbedded in the current level of exports to Europe. The FOB value of current exports by air to Europe is about 2,000,000 JD and represents at least 700,000 JD in domestic value added. The public investment in the pesticide residue laboratory would be justified socially, if the lack of such service were to threaten the acceptance of exports in the EU. As the sector expands, perhaps

as a result of such certification services, the social benefits increase substantially. The pesticide residue testing service would, however, need to operate on a timely and reliable basis if it is to become a true public service rather than another bureaucratic impediment.

4. A Strategy for Investment Promotion

The suggested strategy is a two-step process. The first phase is to prepare Jordan's horticultural export sector, on a firm and sectoral level, to attract investment. The second phase will seek international firms to fill specific market access and technical needs that have been identified in the first phase.

4.1. Phase One: Making Jordan More Attractive to Investors

- **Improve Business Environment:** The exporters' association will lobby the government to reform policies and regulations to streamline trade administration to place horticultural exports on a neutral footing with other sectors.

- **Improve and expand infrastructure:** The exporters' association will lobby the government and international donor organizations for necessary additional infrastructure, particularly a pesticide residue certification program, cold storage facilities, and product standards. Establish an industry task force to examine the implications on infrastructure of possible future trade with Palestine and Israel.

- **Marketing:** Market Jordan's produce rather than each individual exporter's produce. Create a label under which to market Jordanian produce. Administer use of the label by exporters that satisfy criteria set by the exporter association.

- **Improve quality of output:** Reform the domestic marketing system to provide an incentive to produce premium produce. Identify know-how and resources that would improve quality. Introduce better post-harvest practices. Strengthen linkages and encourage cooperation between operators from different sectors of the industry.

- **Local investors:** Remove disincentives and create incentives to attract local investors to the agribusiness industry. Catalogue local resources. Establish relationships between the finance and agribusiness industries. The exporters' association can hire an investment liaison officer to promote the sector among domestic investors.

4.2. Phase Two: Attracting International Partners for Technology Transfer and Market Access

Phase Two involves international partnerships to help develop a sustained market presence through technological and management improvements in the total agribusiness system. This will require building a reputation for Jordanian entrepreneurs as reliable partners in meeting delivery commitments and respecting property rights.

- **Identify needs within Jordan:** The resource and know-how deficiencies that international join-venture partners can fill would be identified during the implementation of Phase One.

- **Prepare individual firms:** Once newly restructured domestic firms have been made attractive to international investors, each Jordanian firm seeking a partner would prepare its business plan. The association could provide assistance on a cost share basis to prepare such plans; initially some of the costs of preparing business plans could be suggested by the donor community.

- **Steps to attract potential international partners:** Identify desirable characteristics of partners. These would include year-round market participation positioned in key European markets, well capitalised, experienced joint venture partners, access to, and familiarity with, new technology.

  Representatives of Jordanian firms that have identified technological needs and have prepared financially viable business plans could be assisted to attend technology trade fairs in the US and Europe. They would present a brief description of their need and interests at selected exhibitions. Some of the briefs could also be used to solicit expressions of interest via trade journals in the US and Europe. The project would assist in screening expressions of interest and in further information exchange between potential partners, particularly regarding a) business reputation, b) financial capability, c) proprietary rights.

  Face to face contacts in Jordan would be at the expense of the interested parties and any deals would be one to one without the involvement of the government, donor organizations or the exporters' association. The association would assist the international firms by providing general information about Jordan's investment climate and infrastructure as well as attesting to the reputation of the Jordanian partner. The association could subscribe to the international credit reference services to provide information on potential international partners. The role of the project and exporters' association is that of <u>mutual</u> screening and referral for both partners <u>but</u> negotiations are the responsibility of the partners, and the partnerships will be financed privately.

  If the Jordanian firms require market access, they would attend the trade exhibitions as observers and not exhibitors. Jordanian firms should not exhibit at trade fairs until they have the capacity to fulfill commitments.

  We strongly recommend against any intense promotional activity with international investors or joint-venture partners until the elements of Phase One are well in place. Until then, individual firms that have specific technological needs could be assisted on a case by case basis as detailed in a rigorously prepared business plan.

Appendices

Appendix One – Investment Profiles

(All amounts are expressed in Jordanian Dinars)

These investment profiles have been prepared for illustrative purposes using the best information available. This information is not intended to be used for making investment decisions. The authors recommend that further independent analyses be performed to determine the viability of any potential investment opportunity.

Pesticide Residue Testing Company

Investment		
Equipment and facilities	350,000	
Operating Capital	175,000	
	525,000	525,000
Revenues per Metric Ton		14.00
Sampling Cost per Metric Ton		10.59
Net Revenues per Metric Ton		3.41
Return to Investment		13%
Sales in Metric Tons		20,000 Metric Tons
Total Revenues		280,000
Total Costs		211,820
Net Profits		68,180

Cutflower Exporter

Investment		
Equipment and facilities	580,000	
Operating Capital	200,000	
	780,000	780,000
Revenue per Carton		57.88
Cost per Carton		41.79
Net Revenues per Carton		16.09
Return to Investment		31%
Sales in Cartons		15,000 Cartons
Total Revenues		868,125
Total Costs		626,813
Net Profits		241,312

Vertically Integrated Company

Investment		
Equipment and facilities and	350,000	
Operating Capital	420,000	
	770,000	770,000
Revenue per Kilogram		1.50
Cost per Kilogram		1.36
Net Revenues per Kilogram		0.14
Return to Investment		13%
Sales in Kilograms		700,000 kg
Total Revenues		1,050,000
Total Costs		953,400
Net Profits		96,600

Appendix Two - Sources of Investment from the United States

Vertically Integrated Firms

C.H. Robinson: Annual sales $1 billion plus. Offices in US and others internationally. Produce procurement, transport and distribution and private label packing. Owns Fresh 1 label used on 28 commodities.

8100 Mitchell Road, Suite 200, Eden Prairie MN 55344,
(612) 937 7888, (612) 987 6737 (fax)

Albert Fisher Group: Sales for 1993, $650 million. Vertically integrated corporation. Owns 27 wholesale and food service distributors and 9 processing operations. Since 1984 Fisher has made 30 acquisitions of companies with sales ranging from $2 million to $85 million. Most recently acquired a processing company, Fresh Western Marketing of Salinas. Acquires produce from Mexico and Latin America.

Subsidiary:

> **Fresh Western Marketing Inc.** Annual sales $213 million. Crop harvesting, crop preparation services for market. Subsidiaries activities include: vegetable crop preparation services, warehousing, and cold storage.
>
> 1156 Abbot Street, Salinas CA 93901-4503; (408) 758 1390

Curtis Burns Foods Inc.: Annual sales of $878.6 million. Manufacturers of canned vegetables, fruits fruit juices desserts and meats, frozen vegetables and fruit, soft drinks, cereal and peanut butter. Exporter, importer public stand alone company. Owns 10 subsidiary companies.

90 Lindon Place, Rochester NY 14603; PO Box 681, Rochester NY 14603-0681
(716) 383 1850, (716) 383 1281 (fax)

Shamrock Foods Co. Inc.: Annual sales $469 million. Packaged frozen goods, canned goods - fruits, vegetables, seafood, meats etc., fresh meat, fresh fish, fresh fruits and vegetables, milk processing.

228 N Black Canyon Highway, Phoenix AZ 85009-2707
Subsidiary:

> **United Food Service Inc.:** Annual sales $130 million. Groceries, general line, packaged frozen goods, fresh meats, fresh fruits, commercial cooking and food service equipment.
> 5199 Ivy Street, Commerce City CO 80022-4404; (303) 289 3581

RRH Corp. (Hunt Consolidated Corp.): Annual sales $631 million. Petroleum production, natural gas production, petroleum refining, land subdividers and developers, beef cattle and general livestock. Sixteen subsidiaries.

1455 Ross Avenue, Dallas TX 75202-2733; (214) 978 8000

Subsidiary:

> **Sharyland Corp., Sharyland Plantation:** Annual sales $55.5 million. Carrot farm, onion farm, lettuce and leaf vegetable farms, pepper farm, sweet and hot vegetables, cotton and vegetable packing services, fresh vegetables.
>
> 1455 Ross Avenue, Dallas TX 75202-2733; (214) 978 8000

Jordan's Meats Inc.: Annual sales $113 million. Sausages and other prepared meats, general line groceries, packaged frozen goods, fresh meats, fresh fruits, fresh vegetables.

38 India Street, Portland ME 04101-4227; (207) 772 5411

Hanover Foods Corp.: Annual sales $192 million. Canned and jarred vegetables, tomato sauce, quick frozen and cold packaged vegetables, frozen and packaged dinners, freeze-dried vegetables, soups and broths.

1486 York Street, Hanover PA 17331-9570; (717) 632 6000

Subsidiaries:

> **Consumers Packing Company:** Annual sales $5.2 million. Quick frozen and cold packaged vegetables, freeze-dried vegetables.
>
> N. Plum and E. Liberty Streets, Lancaster PA 17602; (717) 397 6141
>
> **Spring Glen Fresh Foods Inc.:** Annual sales $7.4 million. Fruit and vegetable relishes, soups.
>
> **Tri-company Foods Corp.:** Annual sales $2.4 million. Vegetables and melons, farms corn, sweet green lima bean farm, green pea farm.
>
> 1486 York Street, Hanover PA 17331-9570; (717) 637 8585

Duda, A. & Sons Inc.: Annual sales $179 million. Vegetables and melons, celery farm, rooted vegetable farm, carrot farm, sugar cane farm, orange and grapefruit groves, fresh vegetables, agricultural machinery and equipment, tractors, sod farm.

1975 W State Road #426, Oviedo FL, 32765-8824; (407) 365 2111

Subsidiaries:

> **Jackson Gene Farms Inc.:** Sales $30 million. Vegetables and melons, less-than-truckload (LTL), transport, vegetable packing services.
>
> 195 Victoria Avenue, Oxnard CA 93030-4710; (805) 984 7494
>
> **Valley Onions Inc.:** $30 million Vegetables and melons, onion farm, pepper farm, sweet and hot vegetables, celery farm.
>
> 5000 S 23rd Street, McAllen TX 78503-8923; (210) 631 3311

Dole Food Co. Inc.: Annual sales $1 billion. Pineapple and banana crops, celery farm, cauliflower farm, fruits, vegetables, canned fruits, dates, fruit juices, land development, construction, water supply, artificial trees and flowers, vegetable packing services, fruit harvesting services, fruit crop market preparation services, local trucking, beef cattle, tree nuts, soil - potting and planting, cold storage and refrigerated warehousing. Thirty seven subsidiaries and 138 operational centers.

Oak Crest Drive, Thousand Oaks CA

Chiquita Brands International Inc.: Annual sales $4.8 billion. Meat packing plants, sausages, frankfurters, bacon, banana groves, grapefruit groves, vegetables and melons, tomato farm, lettuce farm, celery farm, deciduous fruit trees, fruit juices, purchasing service, deep sea foreign transportation of freight, containerization of goods for freight, fruit packing services, crating of goods for shipping, farm management services, canned fruit products, vegetable juices, investment holding companies, heavy hauling, animal aquaculture, salad dressing soups etc., air transportation. Forty-two subsidiaries, 135 sites.

250 E 5th Street, Cincinnati OH 45202-4103; (513) 784 8000

Campbell Soup Co. Inc.: Annual sales $6.2 billion. Canned specialties, soups, fruits, tomato juice, meats, . Frozen and packaged dinners, lunches and breakfasts. Mushroom farms, poultry farms, general groceries, packing plant construction, investment counsellors - short term business credit. Pickles, vegetables and melons, deciduous tree fruits, sales promotions, bakery products (Pepperidge Farms), food mail order, turkeys and turkey eggs. Two hundred and ten sites, and 35 subsidiaries.

Subsidiaries:

Campbell Finance Corp.: Sales $122 million. Investment counsellors, short-term business credit.

200 Continental Drive, Suite 102, Newark DE 19713-4303; (302) 292 2524

Campbell Investment Co. Inc.: Sales $1.2 billion. Cucumbers, pickles, fruit and vegetables, barbecue sauces, fresh and frozen fish, groceries and related products.

200 Continental Drive, Suite 102, Newark DE 19713-4303; (302) 292 2524

Subsidiary:

Campbell Joseph Co. Inc.: Sales $123 million. Vegetables and melons, deciduous tree fruits.

Campbell Place, Camden NJ 08103; (609) 342 6029

Bozzuto's Inc.: Annual sales $260 million. General line groceries, meats and meat products, fresh fruits and vegetables, packaged frozen goods, dairy products and seafood, real estate leasing and rentals, small business investment and general brokerage (SBIC), independent supermarkets. Four subsidiaries.

275 Schoolhouse Road, Cheshire CT 06410-1241; (203) 272 3511

Subsidiary:

Allied Holdings Inc.: Annual sales $55.6 million. Fresh fruits and vegetables, financial management for business, automobiles, groceries and related products. Horizontally integrated company.

19191 S Vermont Avenue, Torrance CA 90502-1018; (310) 538 0007

Boswell J.G. Co. Inc.: Annual sales $200 million. Cotton, subdividers and developers, vegetables and melons, wheat, beef cattle, irrigation systems, agricultural research.

333 S Hope Street, Suite 4600, Los Angeles CA 90071-1467; (213) 485 1717

Packaging

American European Systems (AES): Materials handling, packaging machinery, packing materials, precut equipment suppliers.
702 Spice Island Drive, Sparks NV 89431; (702) 358 3355, (702) 358 3377 (fax)

American-Newlong, Inc.: Materials handling, packaging machinery, packing materials.
5310 S. Harding Street, Indianapolis IN 46217; (317) 787 9421, (317) 786 5225 (fax).

Autoline Inc.: Packaging machinery.
23243 E. Clayton Avenue, Reedley CA 93654; (209) 638 5432, (209) 638 6189 (fax).

Bock Engineered Products Inc.: Packaging machinery.
PO Box 5127, Toledo OH 43611; (419) 726 2645, (419) 726 8583 (fax).

Exact Equipment Corp.: Packaging machinery.
850 Town Center Drive, Langhorne PA 19047; (215) 750 9090, (215) 741 1619 (fax).

General Bag Corporation: Containers, identification.
3368 W. 137th Street, Cleveland OH 44111-0028; (216) 941 1191, (216) 476 3401 (fax).

Hamer Inc.: Packaging machinery, packing materials.
6521 Cambridge Street, Minneapolis MN 55426; (612) 927 4678, (612) 927 8471 (fax).

Hayssen: Packaging machinery.
PO Box 571, Sheboygan WI 53082-0571; (414) 458 2111, (414) 565 3300 (fax).

JMC Packaging Equipment: Packaging machinery.
3470 Mainway, Burlington ON, Canada, L7M1A8; (905) 335 4196.

Kenneth Fox Supply Co.: Containers, identification, materials handling, packaging machinery, packing materials.
PO Box 228, McAllen TX 78502; (210) 682 6176, (210) 682 5768 (fax)

Kitchen Farms Inc.: Packaging machinery.
2400 US 131, Elmira MI 49730; (616) 584 2558, (616) 584 2559 (fax).

Lectro Tek Services Inc.: Materials handling, packaging machinery.
PO Box 2161, Wenatchee WA 98807; (509) 663 2891, (509) 662 8171 (fax).

MAF Industries Inc.: Materials handling, packaging machinery.
36470 Highway 99, Traver CA 93673; (209) 897 2905, (209) 897 3422 (fax).

Modular Ripening Company Inc.:
200 Golden Oak Court, Suite 405 Virginia Beach VA 23452; (800) 235 0459.

Packaging Corp. (PCA): Containers.
1603 Orrington Avenue, Evanston IL 60201-3853; (708) 492 5640, (708) 492 6931 (fax).

TechniPack Machineries Inc.: Containers, identification, materials handling, packaging machinery, packing materials.
3600 Matte Boulevard, #1, Brossard PQ, Canada, J4Y2Z2; (800) 663 9363, (514) 444 2569 (fax).

Tri-Pak Machinery Inc.: Identification, materials handling, packaging machinery.
1102 N. Commerce St., Harlingen TX 78550; (210) 423 5140, (210) 423 9362 (fax).

Volm Bag Company, Inc.: Containers, materials handling, packaging machinery, packing materials.
1804 Edison Street, Antigo WI 54409; (715) 627 4826, (715) 627 4871 (fax).

WeighPak Systems Inc.: Packaging machinery.
1332 Williams St., Montreal, PQ, Canada, H3C1R5; (514) 932 3089, (514) 932 8188 (fax).

Handling - Cooling Systems and Icing

Perishable Refrigeration Inc.:
1421 NW 89 Court, Miami FL 33172; (305) 599 3855, (305) 477 0115 (fax).

Western Precooling Systems: Cooling/ripening equipment.
PO Box 1338, Freemont CA 94538; (510) 656 2220, (510) 656 1137 (fax).

Handling - Pallets

Litco International Inc.: Pallets.
1 Litco Drive, Vienna OH 44473-9648, (216) 539 5433, (216) 539 5388 (fax).

Environment Management

DeltaTRAK Inc.: Materials handling, packing materials, ethylene absorbers, transit temperature recording devices.
PO Box 398, Pleasanton CA 94566; (510) 426 3011, (510) 846 1147 (fax).

Ryan Instruments: Materials handling, warehouse temperature monitors and controls, transit temperature recording devices.
PO Box 599, Redmond WA 98073-0599; (206) 883 7926, (206) 883 3766 (fax).