A Method For Enterprise-Level Risk Analysis for Horticultural Exporters in Jordan

Main Report

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SUMMARY

This report presents methods to analyze risks for horticultural exports that occur along the marketing chain between the farm gate and the first receiver. The sources of risk and marketing chain are discussed using Universal Agribusiness Chain (UAC) concepts developed by Sigma One Corporation. The impact of these risks is quantified in the Risk Analysis Template (RAT) that has been constructed using three categories of information including, an estimate of the cost of produce an estimate of the selling price in the export market and an estimate of the incremental costs of marketing between the farm and the first receiver in the export market. The RAT is a computerized tool that enables the individual entrepreneur to examine the profitability of a particular crop or shipment. The entrepreneur enters the export quantities, the expected sales price and the expected (or actual) purchase prices of the goods into the RAT. Different scenarios are presented that simulate favorable and unfavorable conditions along the marketing chain and in destination markets. The RAT contains cost data for each increment in the marketing chain. The methodology used in designing the RAT is described and instructions and procedures are provided explaining how to update and alter the RAT to suit the individual requirements of the exporter.

Information for numerous products in the markets of Dubai, Qatar, France and the United Kingdom has been generated using the RAT and is summarized in Risk Matrix Tables. Each risk matrix gives a brief picture of the profitability (or otherwise) of the product given a range of product costs and sales prices. In each market the most profitable and least profitable crops are identified. The analysis shows that tomato exports are not profitable, eggplants, peppers (all types) and squash are profitable to both the Gulf and Western Europe destinations while grapes to Western Europe are also profitable. The RAT is intended to help the entrepreneur analyze these as well as other fresh produce for export opportunities from Jordan.

INTRODUCTION AND OBJECTIVES

Fruit and vegetable exports from Jordan can be profitable and are the only avenue for increased farm income, given the small size of domestic Jordanian consumer market. Growth in exports of fruits and vegetables has been stagnant or declining, in part because of the risky nature of agribusiness activities. To take a risk is to undertake an activity whose outcome is not certain. The outcome that occurs may be the desired one or an unwanted one. A business, by nature, undertakes risky activities on a regular basis in the hope that they will yield the outcomes that are desirable (that is profit) more often than not. Put another way, the expectation is that over some relevant time period, the sum of profitable outcomes exceeds the sum of the losses.

This report, and a companion users manual, present a method for evaluating information on risks involved at the individual enterprise level in the fresh fruit and vegetable export sector of Jordan. The main report, and the separately bound risk matrix tables, summarize the analysis techniques developed and results obtained using data collected in June 1994 on post-production marketing costs of exports of fresh produce from Jordan to various destinations. The field work and analysis was jointly undertaken by Mr. Abrar Sattar from Sigma One Corporation, Mr. Jihad Abu-Sondos from Agricultural Marketing Organization (AMO) and Mr. Mohammed Hadi from the Agricultural Marketing Development Project (AMDP) in Amman. The aim is to help AMO establish a simple and rapid post-production marketing risks and costs analysis methodology, for routine use, to measure profitability of agribusiness ventures in Jordan. It is intended that such analysis be performed on a regular basis as an informative service by AMO, and routinely by individual enterprises in assessing their particular market opportunities.

The main objective of this report is to introduce simple techniques of risk and cost analysis, embodied in a Risk Analysis Template (RAT), that can be undertaken at the individual enterprise level. The template is designed to be used by individual entrepreneurs. A secondary objective is to gain insight into the potential for profitability (or lack thereof) of selected traditional fresh fruit and vegetable exports from Jordan. This is done by the application of the Risk Analysis Template

(RAT) to recently collected data. The derivation and use of operating margins as a measure of profitability, and wholesale and destination breakeven prices analysis, form the cornerstone of risk analysis used in this report.

The report is divided into 4 chapters. Chapter 1, Sources Of Risk, describes information needs and the Universal Agribusiness Chain (UAC) concept as applied to fresh produce exports from Jordan to the Gulf and Western European countries. Chapter 2, The Risk Analysis Template (RAT), introduces and describes the uses of the Risk Analysis Template. Chapter 3, The Database For RAT And Update Methods, describes methods used to develop the Risk Analysis Template (RAT) information imbedded in the RAT and ways of updating that information. Chapter 4, Insights From Recent Data, describes the insights gained from the application of the template to recent data. The Conclusion summarizes the report and highlights policy implications in the horticultural export sector at the national and individual enterprise level.

1. SOURCES OF RISK

It is widely believed that Jordan has the potential to profitably export fresh fruits and vegetables. This has been established by comparative advantage studies undertaken in late eighties, and in intermittent analysis since then. As recently as early 1994, *A Strategy for Agribusiness Investment Promotion in Jordan* talks about Jordan's unique opportunity for exploiting international trade in fruits and vegetables. Yet the sector continues to suffer from a lack of growth and even stagnation. We believe that among the culprits for the lack of growth, lies the element of risk, specifically a failure to account for the impact of risk on the sector. This is partly because the impact of risk on any business operation is complex to quantify. What can be done is to develop a methodology to identify a set of possible business outcomes, given the sources of risk in a particular business sector. In this chapter we identify potential sources of risk in the business of exporting fresh fruits and vegetables from Jordan.

The sources of risk in the process of exporting fresh fruits and vegetables can best be illustrated via a description of the information needs for the proposed risk analysis. Essentially, three categories of information are needed to enable the risk and cost analysis to be undertaken.

(1) an estimate of the cost of produce using either the unit cost of production, the prevailing wholesale price or the farm gate price. For the purposes of marketing cost and risk analysis, the cost of produce must be treated as a given to the marketing function. This means that, for this exercise, no effort should be expended to determine the components of the cost of produce prior to harvest.

(2) an estimate of the revenues using the selling prices at destination markets. An agribusiness should treat destination prices as given, in the sense that no one shipper can influence prevailing market prices at the destination.

(3) the Modal (most frequently occurring or reported) costs of marketing. This includes the cost of produce and all the other costs as the produce moves from the time of purchase for export to the time it is delivered to the first receiver at the destination. The first receiver is the first person or business entity to which the title, and thus the associated risk, of produce is transferred.

The first two information needs listed above are clear, though difficult to attain at times. We need some estimation of the unit cost of produce and some estimation of the selling price for that same produce. The third information needs category, modal marketing costs, demands elaboration and discussion.

We can conceptualize the stages of marketing, and thus the costs and risks associated with them. These stages of marketing can be represented, in general terms, by the Universal Agribusiness Chain (UAC) concepts. The UAC provides a technique to document the stages used to "transfer" an agribusiness product from the farm to the first receiver at the destination market. The UAC conceptualizes several stages of transfer of goods. At each stage, while moving from the farmer to the first receiver, the costs, uncertainty and risks associated with the shipment accumulate to include all previous risks and costs. Hence, the further along a UAC a shipment is, the higher the cost and risks the exporter must bear, until title transfers to the first receiver. We can use the UAC concepts, to document key characteristics of the agribusiness marketing chain for Jordanian horticultural exports to two destinations representing different types of markets, the Gulf represented by Dubai and Western Europe by France and England.

1.1 The Marketing Chain To The Gulf Countries.

Over 95 percent of all Jordanian fresh fruit and vegetables exports are to countries in the Gulf region. The primary fresh fruit and vegetable exports to the Gulf countries include tomatoes, squash, peppers, eggplants, oranges and limited quantities of several fruits and vegetables. The primary mode of transport is refrigerated trucks. We use four stages to describe the export process.

ACQUISITION BY EXPORTER: The marketing chain for most produce to the gulf typically begins with purchase of the product in the Amman Wholesale Market. Produce is brought there in two to three ton mini-vans and exporters purchase the entire mini-van and have the goods transported to their workshop (packing house). Alternately, the produce may have been purchased from the farm. The possibility is that the exporter has his own farm(s). This was limited in the case of most products with the exception of tomatoes. Thus, the most common arrangement for exports to the Gulf is for wholesalers in the Wholesale market to arrange for the exporter to have the produce shipped directly from the farm to the exporter's workshop.

POST-HARVEST PREPARATION: Most of this preparation is undertaken at the exporter's workshop. This ranges from no sorting/grading nor additional packaging such as for tomato exports to marginal additional packaging for other exports consisting of taping and securing produce in the boxes and securing the boxes in the truck. In some cases, particularly with tomatoes, produce is transferred directly from the mini-van to the refrigerated trucks without any repackaging or other post harvest handling.

TRANSPORTATION: Produce to the gulf region goes on refrigerated trucks which are rented from trucking agencies. While there is no formal contract, the "agreement" between the exporter and the trucking agency is based on a single price quote (in Rials) by the latter to the former. The single price quote includes all fees and expenses, from the workshop to the delivery point at the destination, for that shipment. Payment is at destination upon delivery. It takes about a day to load the truck and the average travel time from Amman to Dubai is five days. The minimum travel time is three days. Trucks must unload within 24 hours of arrival in Dubai Wholesale Market. Some exporters reported making their trucks wait outside Dubai, for "better" prices. Delays, deliberate or not, can be a major source of risk.

THE SALE: Most exporters (with some exceptions) sell their produce through wholesale import agents in the Dubai Wholesale Market. These agents accept the produce on commission basis and sell through the Dubai Wholesale Market Auction which convenes at 5.00 in the afternoon six days a week (excluding Friday). The cash receipts from the sale are used to pay the trucker and

secure the agents commission (and other expenses). If the cash receipts from the sale are not sufficient, the agent then indicates that on the return invoice, and the exporter makes up for the difference. The frequency of such an occurrence varies from one exporter to the next and is a function of, supply and demand, and quality of produce at delivery. If the net revenues (cash receipts) are positive they are remitted to the exporter, via bank accounts, at a frequency agreed to by the exporter and the agent. Usually this is about two weeks. The most significant source of risk is the selling price that the agent is able to secure.

1.2 The Marketing Chain to Western Europe

Jordan's exports of fresh fruits and vegetables to Western Europe are mostly by air and consist mainly of peppers, squash, eggplants, and green beans, mostly during November to March and grapes during April to June. Limited quantities of other vegetables, including exotic vegetables are also exported. All of these together account for less than five percent of all fresh fruit and vegetable exports from Jordan. The same four stages used to describe exports to the Gulf are employed again.

ACQUISITION BY EXPORTER: The marketing chain for most produce to Western Europe typically begins with the arrangement to purchase a future harvest of currently growing produce on a farm. In many cases, the farm(s) may be owned by the exporters themselves. In rare cases, the Amman Wholesale Market is used as a source for the produce needed to complete a shipment. Produce is transferred to the exporter's workshop (packing house) which is often located on the exporter's farm(s) or near a farming area (e.g. Jordan Valley).

POST-HARVEST PREPARATION: The produce is prepared for air shipment to Western Europe in three stages. The first is the sorting and grading of produce for quality and uniformity. The second is the box by box packaging of the produce. The third stage is the wooden palletization of the boxes. The wooden pallets are transferred to the airport cargo facility.

TRANSPORTATION: The wooden pallet is taken to the Queen Alia International Airport at Amman, usually a few hours before the flight's scheduled departure. Euro-palletization occurs at the airport's air-cargo facilities and is handled by the transport agent. Royal Jordanian, by virtue of having the most direct flights and the cheaper rates, is the air carrier of choice. In the few weeks of higher export volume, exporters use other air carriers which tend to be more expensive.

THE SALE: Exports to Western Europe are both Cost and Freight (C&F), insurance is not an issue, and commission basis. In the Cost & Freight, the title of ownership of the produce changes at the destination airport warehouse. In the commission basis, the exporter retains the title, and thus the risk, throughout the sale process until the produce is sold by the agent/importer in the destination market. Turnaround time for cash receipts related to a particular shipment is 3 to 4 weeks from the time the produce arrives at the destination or title transfers.

1.3 Risk along the Marketing Chains

As can be seen, the marketing chains to the Gulf and Western Europe are very different from each other. The difference is apparent from the first stage, the purchase of the produce for export and extends throughout the export process. The essence of risk analysis for fresh produce exports from Jordan lies in determining which of those stages pose the highest risks. It should be noted that stages with the highest costs are not necessarily the ones with the highest risks. This is true for transportation costs to Western Europe. On the other hand, you can have stages that have high risks associated with them, but the costs for those stages may be low enough to muffle the impact on the overall risk for the venture. An example of this could be the packaging cost. The Risk Analysis Template (RAT), described next, is designed to operationalize UAC concepts and provide simple techniques to measure overall risk impact as well as the risk at specific stages. Annex 1 presents a Glossary Of Terms for the various stages of marketing identified above and used in the development of the Risk Analysis Template (RAT).

2. THE RISK ANALYSIS TEMPLATE (RAT)

The Risk Analysis Template (RAT) is intended for use by an individual entrepreneur to quickly and efficiently calculate the profitability of a particular shipment(s) opportunity. S/He can do this by supplying three pieces of information: (1) the quantity involved, (2) the expected (or realized) wholesale price and (3) the expected destination price. This information is entered in the INPUT area of the template. The MODAL (most frequently occurring) costs of marketing have already been incorporated in the template and are described in Chapter 3.

2.1 Three Key Questions Answered By RAT

The template processes the information input to yield, in the OUTPUT area, answers to three key questions that address elements of risk taking and profitability.

(1) What is the expected operating margin (revenues minus operating expenses) for a particular shipment or set of shipments (season)?

(2) At a given wholesale price, what is the minimum destination selling price that the exporter must request in order for him/her to breakeven? If he obtains a selling price higher than the breakeven selling price, his operating margin is positive. The higher the wholesale price, the higher the selling price needed to breakeven.

(3) At a given selling price, what is the maximum wholesale price that the exporter can afford to pay the farmer? If he obtains a wholesale price that is lower than the breakeven price, his operating margin is positive. The higher the selling price, the higher the wholesale price that an exporter can afford to pay to breakeven.

2.2 Five Scenarios Analyzed By RAT

For each of the three questions listed in section 2.1, five scenarios are examined. A scenario is a possible outcome of an action. The first scenario examines the possible outcome as intended. The second through the fifth scenarios examine selected risk factors that can affect the outcome in the first scenario. They are a measure of how much the first scenario outcome could differ if certain events occur. In each situation, the bench mark to compare is the base scenario. The base scenario is, in a sense, an estimation of the actual outcome expected by the user of the template.

(1) The first scenario is the base case. This is the case that examines the prices and costs as input by the user. This is the event that is most likely to occur as the users' choice of prices and costs is likely to reflect his or her actual experience and intimate knowledge of the marketplace.

(2) The second scenario estimates the impact of a shipment delay on the operating margin. A shipment delay is likely to reduce the quality of fresh produce. Thus a 20 percent drop of destination price is built into this scenario.

(3) The third scenario tries to gauge the impact of poor quality produce on profitability. The poor quality produce may be a result of any number of factors including, poor sorting or grading, poor packaging and so on. Thus a 10 percent wastage and 5 percent drop in selling price are built into this scenario.

(4) The fourth scenario measures the impact of a saturated destination market where supply exceeds demand significantly. This is simply market forces at play, beyond the control of the exporter. A 10 percent drop in selling price is built into this scenario.

(5) The fifth scenario measures the impact of high demand in the destination market, where demand exceeds supply, on profitability. Again, this is simply market forces at play, except that this time they favor the exporter. Thus a 10 percent increase in selling price is built into

this scenario. The inclusion of this scenario is intended to highlight the essence of risk taking, in that the outcome can be worse or better than the expected outcome.

Any number of additional scenarios can be evaluated using the RAT. This would be done by appropriately modifying the template to reflect a scenario. The way to modify the template is explained in the users manual.

2.3 RAT Computerized And The User's Manual

The Risk Analysis Template (RAT) is a computer spreadsheet program designed for use with Quatro or Lotus Software. Two sample printouts of the RAT analysis are attached as Annex 2. There is a RAT template for four main destinations. These are Dubai, Qatar/Bahrain, France, and the United Kingdom. Each RAT template has a summary page and five analysis areas for each of the five scenarios. The first page of each sample printout in Annex 2 is the summary area in the RAT. This summarizes the key results for all five scenarios. The next five pages of each sample printout are the detailed analysis area, one for each scenario.

A separate USERS' MANUAL has been developed for use with RAT. The User's Manual has been designed for use by an individual entrepreneur. The manual documents specific steps on how to use the template. Additionally, it lists the steps to modify costs and other formulas constructed in RAT. As an example, if an exporter is experiencing a wastage factor greater or lower than the one imbedded in the template, the template can and should be modified accordingly.

2.4 Seasonal Analysis Using RAT

The use of RAT as a quick and efficient method to gauge the profitability of a specific export opportunity has just been described. A second use is to gauge the overall profitability for a product or destination for a particular shipping season or year. Hence, the exporter, using the tool can determine if a particular product, say Green Beans, can be profitable to a particular

destination, say Dubai for that season. In order to do this, the exporter will examine the modal costs in the template and conclude which of them, if any, need modification to make them the modal costs for that season. Once satisfied that the template has the modal costs for that season, the resulting analysis is a fair representation of possible outcomes. To the exporter, the analysis responds to the key question, is the sum of profitable outcomes likely to exceed the sum of the losses for that season for the product and destination under consideration? Chapter 4 presents such analysis using data gathered for the 1993-94 seasons.

2.5 Stages of Marketing Analysis Using RAT

The stages of marketing, as described by the UAC, are imbedded in the template. For detailed analysis, the user (exporter) can examine the breakdown of the costs occurring in the venture. This can be done by examining the percentage breakdown of costs at each stage and the cumulative percentage costs for each additional stage of transfer of goods. This is done for each of the five scenarios examined. Marketing stages that contribute the highest costs, percentage wise, should form the main focus of addressing risk containment. Alternatively, stages that contribute little to the total costs, but their costs may fluctuate a lot and thus contribute to the risk, should not be the primary focus of the exporter as the overall effect of any risk containment at that stage will be limited.

The UAC emphasizes the cumulative nature of risks and costs as the shipment moves to its destination. This means that if a stage of marketing has limited risk but is further along the chain, it would have accumulated all the risks and costs up to that point. Thus at any stage, the entrepreneur should consider all the previous costs and risks as sunk in that they can not be recovered by the exporter. Consequently, the impact of losing the shipment at any stage is higher than the previous stage. It is all the costs and risks added up to that point. Hence, the decision to move to the next marketing stage becomes more critical and costly as you move along the chain. An important implication of UAC analysis is that the entrepreneur, under certain circumstances, should be willing to incur higher costs, to maintain quality, at stages further along the marketing chain, or not undertake the shipment at all.

3. THE DATABASE FOR RAT AND UPDATE METHODS

We began this report by conceptualizing the marketing process, information needs, and the analysis needed. The conceptualization of the marketing process and information needs were described in Chapter 1. The analysis needed and the tool to undertake the analysis, the RAT, are developed in Chapter 2. In this Chapter we describe how the data base was developed, present the modal information obtained, and discuss ways of updating the information and updating the RAT.

3.1 Method Used To Develop The Database

The interview was used as the primary source of information. A set of questions was developed to solicit information on cost of produce, costs of marketing (exporting) to reflect the stages described in Chapter 1 and destination prices. Sixteen interviews were conducted in early June 1994: eleven were with exporters to the Gulf area, four with exporters to Western Europe and one with a refrigerated truck rental company.

Upon completion of the interviews, the investigative team recorded, sorted and discussed the data received and proceeded, using a consensus building approach, to develop a MODAL PROFILE of local purchase costs, all the marketing costs and the destination prices. All of these costs were UNITIZED to a per kilogram basis for comparability purposes.

Additionally, for selected produce, the wholesale prices from Amman Wholesale Market, as recorded by AMO, and destination wholesale prices in United Kingdom, as reported in the October 1993 to April 1994 issues of the Fresh Produce Journal were used.

Data was also collected to estimate fixed costs and overheads. However, extended deliberations on this issue did not yield modal fixed costs or overhead rates that could be used in the template (RAT). Firstly, it became complicated to separate fixed costs on a product by product basis

within the activities of a single entrepreneur. Secondly, overhead rates reported had a significant range, between the businesses, thus estimating a modal overhead rate, at best, would have been a guess. However, the derivation of fixed costs and overheads is not essential to the completion of the template (RAT). This is because, all businesses have fixed costs and overhead rates. The primary purpose here is to determine if the produce export business obtains higher or lower margins than other businesses. Thus one way to view operating margins, which are measures of profitability, is as payment to overhead and fixed costs. This means that the operating margin received for a business venture be equal to the fixed costs and overhead attributable for that venture, and yield some net profit, such that the venture is more profitable than the next best use of the available resources to the enterprise.

3.2 Modal Data Derived For RAT

The Modal (most frequently occurring or recorded) costs for the stages of marketing and other assumptions used are presented next. These are the modal costs that were obtained through the interview process described in section 3.1. They form the basis of information used to construct the RAT. Each one of these stages, and thus the costs and assumptions associated with them, can be viewed as a risk factor. To test the Template, a set of wholesale and destination prices was also compiled from the interviews. Confidentiality concerns force us not to publish any prices as the data comes from individual private businesses.

3.2.1 Modal Marketing Costs For Gulf Exports

1. Exchange rates =.19 Jordanian Dinars/Rials UAE, Saudi, & Qatar.
2. Truck Load = 17,000 Kilograms
3. Local Regulatory Costs

    * 2% of Cost Of Produce for Amman Municipality
    * 3 JD per truck, Certificate of Origin to Dubai

* 75 JD per truck, Certificate of Origin to Qatar & Bahrain

4. Transport to Workshop = .001 JD/KG
5. Post Harvest Labor = .005 JD/KG
6. Post Harvest Materials = .004 JD/KG
7. International Transport

Dubai: 40 % at 8000 Rials + 60 % at 6000 Rials

Qatar/Bahrain: 30 % at 6000 Rials + 70 % at 5000 Rials

Note: Percentage breakdown reflects export volumes in the months at which the above rates prevail. The higher rates tend to occur in the months of April to August.

8. Destination Unloading = .003 JD/KG
9. Destination Commission = 6 % of sale invoice.
10. Wastage = 2 % of quantity multiplied by the sum of all unit costs.
11. Cash Flow Financing = 14 days per truck load at 11 % rate sum of all costs up to international transport.

3.2.2 Modal Marketing Costs For Western Europe

1. Exchange rates (1 JD =)

Deutsche Mark = 0.42 JD
French Franc = 0.12 JD
British Pound = 0.96 JD

2. Local Regulatory Costs = .010 JD/KG
3. Transport to Workshop = .002 JD/KG
4. Post Harvest Labor = .040 JD/KG
5. Post Harvest Materials = .075 JD/KG

6. Palletizing cost = .006 JD/KG
7. Transport to export point = .024 JD/Kg
8. Transport Agent Commission[1] =.010 JD/KG
9. International Transport =

Paris = .420 JD/KG to Paris

London =.460 JD/KG to London

10. Wastage = 2 % of quantity multiplied by sum of all unit costs.
11. Cash Flow Financing = 30 days at 11 % rate. (for the whole operation)

As noted previously, the user can, upon examination of the modal costs in use, choose to use the modal costs as entered or alter any one or all of the costs to reflect his or her specific cost structure. The Users' Manual, available with the template, details methods of implementing modifications. For example, the entrepreneurs exporting grapes to European Union (EU) countries in the months of July and August and onwards are subject to the taxes imposed by EU on grape imports from Jordan. They will need to account for those taxes in the calculations.

3.3 Methods To Update Information For The RAT.

There is a need to monitor and update the information collected and used in the template on a regular basis. This is because as time progresses, the modal costs change and these changes need to be incorporated in the template on a regular basis. Additionally, further risk analysis, will require updated information. Furthermore, to reduce the information (and thus the risk) gap, the individual entrepreneur can be provided with useful information, such as destination prices, on a regular basis. This section suggests ways of collecting and disseminating relevant data and

[1] The Transport Agent Commission has been discontinued since this investigation and is no longer included in the calculations of marketing costs for Western Europe.

information and updating the template. The relevant data for this exercise, as documented earlier, are the prices and marketing costs.

3.3.1 The Interview

Interviews with private businessmen should be the primary source of information to update the modal costs in the template. A key reason for this is that the businessman is by far the most accurate source of information on the costs of doing business. The interview should be designed primarily to obtain information on costs of marketing. It should be done at least once a year. The optimal time for the interview is between sixty to ninety minutes, but a shorter or a longer interview may be equally productive. Extreme care must be taken to ensure that the results of any individual interview remain confidential within the investigating team, at all times during and after the research. It is crucial that data is converted to modal estimates before publishing and use in the update of RAT.

3.3.2 Published Sources

The Agricultural Marketing Organization collects price information on a daily basis from the Amman Fruit and Vegetable Wholesale Market. All types of prices are recorded, but the high prices of a product on any given day can be used as an approximation of the unit cost of produce for exports. Some of the prices recorded are converted in to weighted averages using export volumes. It is preferable to use the actual price recorded. It should be ascertained if a premium should be added for certain destinations like Western Europe.

A very convenient and regularly available published price information is from the Fresh Produce Journal. This publication is received in the Agricultural Marketing Development Project offices and information and data from it is often published in the AMO weekly newspaper. The publication lists wholesale prices for selected products in London's Wholesale markets. The Agricultural Marketing Organization is currently generating a database for prices of selected products from the Fresh Produce Journal. These prices can be made available to the exporters as

gather at as many as twenty (20) spots in the market. In most cases, the local importer/wholesale agent executes the transactions on behalf of the exporter. The buyers (retailers, hoteliers, wholesalers) bring their transport vehicles to the market, bid on the produce they need and transfer the purchases to their vehicles. If the prices that prevail are recorded in a systematic way, an arrangement can be made to obtain the prices via fax. In the absence of an organized recording system for the prices prevailing in a market on a given day, a system can be set up to obtain and make available the prices, both for analysis purposes and as raw information to exporters: The basic proposal would entail elements described in the Qat/Sondos trip report:

Step 1. Make arrangements with an entity (government or private) to assign a person or a team to gather prices during the highest shipping season of produce from Jordan. The person or team will visit the auction place, monitor, and record the minimum, maximum, and mostly prevailing (the mode average) prices for selected (designated) produce of Jordanian origin, if possible, or other origins.

Step 2. The information would be captured on a standard one page form and faxed the same evening or the first thing next morning to the AMO Amman headquarters. This form would be designed by an AMO team in collaboration with AMDP staff and provided to the contact designated in the destination market.

Step 3. The availability of the prices on a regular basis should be heavily advertised including personal contacts. The information would be available in the office for anyone to obtain and can be published in the weekly AMO newsletter. Additionally, it may be feasible to publish a daily or weekly destination price schedule in a selected local newspaper.

Once the process has become smooth for the Dubai market, steps one to three, with appropriate modifications, can be replicated for any number of destination markets.

5.4 Updating RAT

A new version of the RAT should be made available every year. This new version would have the updated information incorporated in it by AMO staff. It will also include any modifications to the structure of RAT that the AMO staff find it prudent to make. Each year, AMO would contact current users of the template and update their templates. Additionally, each year, there should be a new drive to advertise the existence and use of RAT. The objective would be to maximize the ability of investors to gauge risk and costs associated with the export of fresh produce. Providing information and tools to the private sector goes a long way towards risk reduction, as information gaps are reduced and the investor is able to make more informed decisions.

4. INSIGHTS FROM RECENT DATA

The primary use of the RAT, as intended, is to generate, quickly and efficiently, a set of possible outcomes for a specific fresh fruit and vegetable export opportunity. The development of the tool required field data gathering for information to build and test the RAT. We use this chapter to summarize some of the insights gained, while developing the RAT, into the potential for profitability of selected fresh produce exports from Jordan to the Gulf and Western Europe.

The Risk Analysis Template generates two types of information. The operating margin and the breakeven prices. Both are generated for the base case and four additional scenarios as described in Chapter 2. The Risk Matrix, presented next, summarizes the base case operating margins and breakeven prices for selected produce and destinations. The What-If analysis, that follows, documents alternative cases (scenarios) for a selected number of products and destinations.

4.1 The Risk Matrix Tables

The risk matrix is a way of summarizing the base operating margins and breakeven prices for a commodity and destination. It allows for a snapshot view of possible profit or loss outcomes that are likely to exist as wholesale and destination prices are allowed to vary, one at a time. The Risk Matrix Tables are separately bound for distribution with the main report. One of the tables, Table 1: Tomatoes to Dubai, is reproduced on Page 21. Thirty such tables have been produced for various commodities and destinations. The tables come with their own glossary that describes the terms used in them. Throughout the Risk Matrix, the marketing costs used are the ones developed for the base case scenario, for each destination, in the Risk Analysis Template. Thus, each cell in the table is a base case scenario. Negative operating margins are denoted with a bracket around them. The main insight from the information in each table is presented in the observations area at the bottom of each table.

Table 1: Operating Margins and Breakeven Prices For Tomatoes To Dubai

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(317)	(59)	12	(39)	1.09 R
Highlands	(251)	(35)	25	(18)	0.92 R
AMO Low '93	(163)	(21)	43	(11)	0.68 R
AMO High '93	(361)	(76)	3	(54)	1.21 R
Early June '94	(185)	(10)	38	3	0.74 R
Breakeven Cost	0 JD	.028 JD	.126 JD	.045 JD	

Observations: Profit potential using only the maximum selling prices.
Breakeven Purchase Cost Spread = over 100%, Very High Risk
Breakeven Selling Price Spread = 43%, Medium Risk

A review of Risk Matrix Tables (bound separately) should consider the following:

1. A positive margin for a particular combination has to cover the investors fixed costs and overhead before yielding a profit.

2. The entrepreneur should estimate the probability and frequency (percentage of all exports of that commodity) of his operating in the cells that have a positive margin. If the entrepreneur concludes that the probability and frequency is going to be low, than s/he is likely to make a loss on that product for that destination.

3. No individual entrepreneur's actual operation will "fit" any one of the scenarios precisely as cost structures experienced by exporters vary.

4. Margins may vary from one commodity to next, as specific costs for that commodity vary. This analysis uses two basic modal cost structures: one for Gulf and one for Western Europe, with international transportation accounting for specific destinations.

5. A casual review of the breakeven selling price should give the investor a rough idea of the range of prices to look for at the destination. If he obtains a destination price towards the low end of the range reported, he is probably making a loss. The BREAKEVEN SELLING PRICE SPREAD is the percentage difference between the highest and the lowest breakeven selling price, that yield a 0% margin, for the unit purchase costs reported. The bigger the spread, the larger the range between unit purchase costs used (reported). If the breakeven Selling Price Spread is observed to be high risk, more than a 100%, there is need to be cautious about any long term commitments to that product and destination.

6. A casual review of the breakeven purchase (wholesale) cost should give the investor a rough idea of the range of the unit cost of produce to pay. If he is, more often than not, paying the higher end of the range reported, he is probably making a loss. The BREAKEVEN PURCHASE COST SPREAD is the percentage difference between the

highest and the lowest breakeven unit purchase cost (wholesale prices), that yield a 0% margin, for the selling prices reported. The bigger the spread, the larger the range between selling prices reported. If the breakeven Purchase Cost Spread is in the high risk category, more than 100%, there is need to be cautious about any long term commitments to that product for that destination.

7. For the breakeven spreads, risk is, arbitrarily, categorized as low, medium, high, and very high. Thus a breakeven spread of between 0 and 39 percent is low risk, 40 and 69 percent is medium risk, 70 and 99 percent is high risk, and 100 percent and above is very high risk.

4.1.1 The Dubai Market

The best opportunities, potentially, are afforded by Squash, Green Beans, Eggplants, Capsicums and Hot Peppers. Local Oranges have a low profit margin outlook under limited purchase cost, selling prices combinations. Oranges from Gaza are more likely to be profitable, specially since their breakeven selling price spread, at 37%, falls in the low risk category, The most depressing outlook for the Dubai market is for Tomatoes. The analysis shows that the exporter must obtain the maximum selling prices for the majority of his tomato exports to obtain an overall profit margin. The Breakeven Purchase Cost Spread is in the very high risk category. Cucumbers also pose a problem, in that maximum selling prices have to be used to obtain profits. Very low destination prices and the bulky nature of Watermelons seem to result in negative margins for this product.

4.1.2 The Qatar Market

Squash, Green Beans, Eggplants and Capsicums yield, potentially, very high operating margins, though most of them have a big cost spread, and thus are highly risky. Tomatoes to Qatar are more likely to be profitable than Tomatoes to Dubai. This is primarily due to the difference in the international transport cost. Cucumbers do not fare much better either.

4.1.3 The French Market

Margins to Western Europe, in general are positive, though much less than the Gulf markets. Interestingly, the purchase costs incurred for produce going to Europe is much higher, as are the selling prices obtained. However, the risks associated with prices fluctuating, both in the domestic market for cost of produce and the destination markets, are in general much lower than the Gulf destinations. This means that it is easier for the exporter to determine his or her profit and loss range. Majority of the exports to Europe occur in the period of October to April. At this time, most of the produce originates in the Jordan Valley. The summer exports are mostly from the Highlands area. The Green Beans exports to Europe use produce grown in Ghor Safi. Capsicums showed a low operating margin while Grapes had much higher margins.

The analysis of Eggplants yields some interesting insights: for the Classic variety, data was analyzed using Eggplants grown in Open fields and Greenhouses, and the Jordan Valley and Highlands. Each of the origins yielded its own purchase cost and selling price combinations which were, in absolute numbers, much different from each other. Yet interestingly, the open field and greenhouse eggplants yielded similar operating margins as did the Jordan Valley and Highlands produce. All of them clearly showed that Eggplant exports to France can be profitable. Furthermore, since at least one of those combinations is available much of the time, profitable exports of eggplants to France are possible for an extended period during the year which can contribute to a reduction in overall risk.

4.1.4 The United Kingdom Market.

Actual selling prices are not used for analyzing the United Kingdom market. Instead, the minimum and the maximum prices, during the period of October '93 and April '94, in the New Covent Garden (Wholesale) market in London, as reported in the Fresh Produce Journal are used. Cucumbers, Green Beans, and Eggplants yield significantly high margins using the maximum selling price. The breakeven selling price spread for these three products ranges only from 16%

to 40%. This is a strong indication, albeit indirect, that these three products will be profitable even at the modal selling prices obtained when being exported to the United Kingdom from Jordan.

4.2 The What-If Risk Analysis

The What-If analysis summarizes possible scenarios alternative to the base case. Table 2 on Page 26 lists the impact on operating margin if the selling price changes and certain costs go up. Any number of What-If questions can be asked. For illustration purposes, only three What-If questions are asked: the impact on the computed margin (the base case) of increasing or decreasing the selling price by 10%, and the doubling of all costs except cost of produce and international transport. This is done for selected commodities using only modal selling prices and purchase costs. The computed operating margin reported are the same as the base case margins reported in the appropriate (product & destination) table in the Risk Matrix Tables.

Increase or Decreasing the Selling Price by 10% simulation: The impact on the operating margin from this simulation ranges from a change of only 2% to a change of 14%, depending on the product and destination. This means that it would be highly risky to undertake a venture whose operating margin could change by up to 14%, just by a 10% change in the selling price. As a 10% change in the selling price is very likely, the risk in undertaking ventures that result in a 14% change in operating margin could be very high. This would be particularly true if, to begin with, the product's computed (base case) margin is in the neighborhood of 14% as a 14% change in the operating margin could wipe out any profits. Thus the investor should either be working with a product that has a low impact on the operating margin or has a significantly high computed margin to suffer the fluctuations. Of-course, the potentially very high benefits of a highly risky investment should be weighed in before making a decision.

Table 2: The What-IF Risk Analysis Table				
	For Modal Selling Prices			
		Operating Margin if there is a		
Commodity (Source/Type Of Cost, Destination)	Computed Operating Margin	10% Increase in Selling Price	10% Decrease in Selling Price	Doubling of all costs, except cost of produce and int'l transport
Tomatoes (Highlands, Dubai)	(35)	(23)	(49)	(55)
Cucumbers (Highlands, Dubai)	(15)	(5)	(27)	(30)
Squash (Highlands, Dubai)	25	32	18	14
Green Beans (Highlands, Dubai)	20	27	12	9
Eggplants (Highlands, Dubai)	43	47	37	32
Capsicums (Highlands, Dubai)	39	44	33	29
Hot Peppers (Modal, Dubai)	29	35	22	17
Oranges (Gaza, Dubai)	(22)	(12)	(35)	(37)
Cucumbers (Modal, France)	5	13	(6)	(15)
Squash (Modal, France)	16	24	7	0
Green Beans (Modal, France)	(6)	4	(18)	(20)
Capsicums (Modal, France)	11	19	1	(5)
Grapes (Modal, France)	21	29	19	8

Doubling of all costs, except cost of produce and international transport simulation: The range of impact on the operating margin is between 10 to 20%. This means that if all the costs, except cost of produce and international transport were doubled, all together, they would have a negative impact of only between 10 to 20% on the operating margins. The likelihood of all the costs doubling, simultaneously, is small. Consequently, the impact of some of the costs going up, even doubling, will be less than 10 to 20%. This analysis shows the relative unimportance of all the marketing costs combined, if the cost of produce and international transport are left out. This is not say that other costs are not important. In a sense, an argument can be made that more expenses, if necessary, can be incurred, say for sorting, because high costs and risk has already been incurred (sunk) in to the export process. Thus, if by incurring higher sorting costs, say doubling them, a higher destination price can be obtained, this analysis indicates that gains from higher destination price can outstrip the additional costs.

CONCLUSIONS

This report has presented a method for enterprise level risk analysis for horticultural exports from Jordan. It discusses the Universal Agribusiness Chain (UAC) concepts and their application to the marketing chains of horticultural produce from Jordan to the Gulf and Western Europe. It presents the Risk Analysis Template (RAT), its derivation and its uses. It presents methods for updating information needed for the risk analysis using the template. Finally, it offers some insights into the profitability of selected fresh produce exports from Jordan. The insights highlight the need, on the part of the individual entrepreneur, for careful examination of each export opportunity. As the first sentence of the report states, exports of fresh produce can be profitable, for selected products and destinations. Our analysis provides some clues on which products can be profitable and which are likely to lead to losses:

1. In general, exports of tomatoes from Jordan is not profitable. This is primarily due to low destination prices, resulting from a very competitive market, which are unable to cover the necessary marketing costs.

2. Some products are profitable at several price levels to destinations in the Gulf and Western Europe. These include peppers (all types), eggplants, and squash.

3. Exports of Grapes to Western Europe are profitable at several price levels.

However, the entrepreneur should be encouraged to use The Risk Analysis Template (RAT) to ascertain the conditions (breakeven prices and costs) under which a specific export opportunity could be profitable and asses the impact of risk by reflecting on what some of the other outcomes might be using techniques like the What-If analysis.

ANNEX 1

GLOSSARY OF TERMS

EXPORTER:	A term used to identify a business person who undertakes to export produce from Jordan. A farmer may be an exporter as well. In this analysis, only costs incurred in the export process, thus by an exporter are considered. The cost of produce is just one more cost in the cost of exporting (marketing).
MARKETING COSTS:	Costs incurred by the exporter in the process of exporting fresh produce from Jordan. Includes all costs borne by the exporter until produce (and risk) pass to the first receiver at the destination market.
REVENUES:	The quantity sold times the selling price.
INPUT:	The area where the user/analyst enters information specific to the purchase cost, selling price case at hand.
SALES IN KILOGRAMS:	An input variable where the user/analyst enters the sales in kilograms for the period under consideration. This period can be a day, a month, a season, an year or a truckload or a single consignment.
SELLING PRICE:	The foreign currency price per kilogram received from the first receiver at destination. This is the price per kilogram actually paid to the exporter. Any destination commissions or charges must be subtracted from the selling price separately.
WHOLESALE PRICE:	This is the domestic purchase price for the exporter. It may be the cost of produce, the farmgate price or the wholesale price. It is recorded in Jordanian Dinars per Kilogram.
OUTPUT:	The area where the user observes the result of his entered information and the analysis performed.

Glossary Continued

OPERATING MARGIN:	The operating profit (loss) divided by the total revenues expressed in percentage terms. This can also be viewed as payment to overhead and fixed costs.
FIRST RECEIVER PRICE:	Same as the selling Price.
EXCHANGE RATE:	Number of Jordanian Dinars in one foreign currency unit.
COST OF PRODUCE:	The cost of purchase of the produce sold (exported), or the cost of production for a totally vertically integrated firm.
LOCAL REGULATORY COST:	Any expenses incurred to satisfy any Jordanian government or destination government regulations to purchase and/or prepare produce for export. These include Amman Wholesale Market fees, certificate of origins required by destination markets.
TRANSPORT TO WORKSHOP:	The cost of transportation of produce purchased for export from the farm or the Amman Wholesale market to the exporters workshop.
POST-HARVEST LABOR:	Any and all labor expenses incurred by the exporter in the process of loading, unloading, sorting, grading, or packing produce for export. This also includes any other post-harvest labor expenses incurred by exporters. In the case of European exporters, this includes palletizing labor cost.
PACKAGING / LABELS:	All post-harvest material costs to prepare produce for export, excluding palletizing materials. This includes, boxes, tape, paper etc.
COLD-STORAGE:	The cost of using or renting space in a cold storage facility before export.

Glossary Continued

PALLETIZING: Those costs of materials for palletizing produce for air-transport that are incurred by the exporter.

TRANSPORT TO EXPORT POINT: In the case of air shipments, the cost of transport from the workshop to Amman export.

TRANSPORT AGENT COMMISSION: In the case of air shipments, the commission paid to an agent to reserve cargo space, etc.

INTERNATIONAL TRANSPORT: The cost of international transport from the point of export from Jordan to the first destination in the destination market. In the case of air transport, it is the cost per kilogram charged by the airline. In the case of truck transportation, it is the entire cost of transportation by land, including all fees, driver salary, transit taxes, fuel, diesel taxes, unloading charges etc. The trucking company quotes a single price for the entire package.

DESTINATION REGULATORY COST: Any expenses incurred to satisfy any destination government regulations to deliver produce to the destination market that have to be paid at the destination.

DESTINATION UNLOADING CHARGES: Charges at destination to unload produce. These are not part of any other charges incurred by the exporter.

DESTINATION COMMISSION CHARGES: Commission charges by the destination handling/wholesale agent or importer. In the case of C&F shipments, this would be zero.

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Glossary Continued

WASTAGE: An estimate of the quantity of produce wasted between purchase and sale times sum of all relevant costs. These include all costs up to the point of export and discounts for poor quality.

CASH FLOW FINANCING: The cost of financing shipments. In Jordan, the common method used is the overdraft.

TOTAL OPERATING EXPENSES: All expenses directly attributable, and measurable, to the export of a shipment. This will exclude fixed costs and any overhead.

OPERATING PROFIT: The net difference between total operating expenses and revenues for sales under consideration. If negative, it is a net loss.

ANNEX 2

RISK ANALYSIS TEMPLATE (RAT)

Printouts for Sample Cases

1 & 2

Risk Analysis Template Summary: Produce To Dubai

Inputs for Base Case:

SAMPLE PRINTOUT: CASE 1

10,000	Sales in Kilograms (KG)
3.00	Selling Price (Rials/KG)
0.30	Wholesale Cost (JD/KG)

OUTPUT SUMMARY

(A) Operating Margin (%)	(B) Breakeven Wholesale Price (JD/KG)	(C) Breakeven Selling Price (FC/KG)	(D) Case Number And Description
23%	0.43	2.31	1. Base Case Input Wholesale & Selling Prices
5%	0.32	2.27	2. Shipment Delay Selling Price Down 20%
13%	0.37	2.48	3. Poor Quality Produce 10% Wastage & Selling Price Down 5%.
15%	0.38	2.29	4. Destination Market Saturated Selling Price Down 10%.
29%	0.48	2.33	5 High Demand in Destination Market Selling Price Up 10%.

Notes:

(A) Operating Margin: Revenues – Operating Expenses (Operating Profit) divided by Revenues Expressed in Percentage Terms

(B) Breakeven Wholesale Price in JD/KG given the destination price. This is the maximum wholesale price affordable given the selling price

(C) Breakeven Destination Price (in Rials/KG) Given the Wholesale Price. This is the minimum selling price required given the wholesale price.

(D) Case Number and Description of the case. Case Numbers match with the Template Numbers.

Scenario One: Base Case

...ts for Scenario One

SAMPLE PRINTOUT: CASE 1

...les in Kilograms	10,000
...rst Receiver Price (in fc/kg)	3.00
Exchange Rate (fc/JD)	0.19

("fc" = foreign currency)

Income Statement

Revenues					
First Receiver Price (JD/kg)	0.57				
Sales in kg	10,000				
Total Sales			5,700		
Operating Expenses					
	(a)	(b)		(c)	(d)
Cost Of Produce	10,000	0.300	3,000	68.40%	68.40%
Local Regulatory Cost	10,000	0.006	62	1.41%	69.81%
Transport to Workshop	10,000	0.001	5	0.11%	69.92%
Post–Harvest Labor	10,000	0.005	50	1.14%	71.06%
Packaging / Labels	10,000	0.004	40	0.91%	71.97%
Cold–Storage	10,000	0.000	0	0.00%	71.97%
Palletizing	10,000	0.000	0	0.00%	71.97%
Transport To Export Point	10,000	0.000	0	0.00%	71.97%
Transport Agent Commision	10,000	0.000	0	0.00%	71.97%
International Transport	10,000	0.076	760	17.33%	89.30%
Destination Regulatory Cost	10,000	0.000	0	0.00%	89.30%
Destination Unloading Cost	10,000	0.003	30	0.68%	89.99%
Destination Commission Cost	10,000	0.034	340	7.75%	89.99%
Wastage	200	0.429	86	1.95%	99.69%
Cash Flow Financing	10,000	0.001	14	0.31%	100.00%
Other Operating Expenses	10,000	0.000	0	0.00%	100.00%
Total Operating Expenses			4,386	100%	100%
Operating Profit (Loss)			1,314		
Important Financial Statistics					
Breakeven Selling Price			2.31		
Breakeven Wholesale Price			0.43		
Operating Margin			0.23		

Notes:

(a) Kilograms
(b) Unit cost per kilogram
(c) Proportion (percentage) of total operating costs
(d) Cumulative percentage of total operating costs

Scenario Two: Shipment Delay
(Selling Price Down by 20%)

Inputs for Scenario Two

SAMPLE PRINTOUT: CASE 1

Sales in Kilograms	10,000
First Receiver Price (in fc/kg)	2.40
Exchange Rate (fc/JD)	0.19

("fc" = foreign currency)

Income Statement

Revenues

First Receiver Price (JD/kg)	0.46				
Sales in kg	10,000				
Total Sales			4,560		
Operating Expenses					
	(a)	(b)		(c)	(d)
Cost Of Produce	10,000	0.300	3,000	69.53%	69.53%
Local Regulatory Cost	10,000	0.006	62	1.43%	70.96%
Transport to Workshop	10,000	0.001	5	0.12%	71.08%
Post–Harvest Labor	10,000	0.005	50	1.16%	72.24%
Packaging / Labels	10,000	0.004	40	0.93%	73.16%
Cold–Storage	10,000	0.000	0	0.00%	73.16%
Palletizing	10,000	0.000	0	0.00%	73.16%
Transport To Export Point	10,000	0.000	0	0.00%	73.16%
Transport Agent Commision	10,000	0.000	0	0.00%	73.16%
International Transport	10,000	0.076	760	17.61%	90.78%
Destination Regulatory Cost	10,000	0.000	0	0.00%	90.78%
Destination Unloading Cost	10,000	0.003	30	0.70%	91.47%
Destination Commission Cost	10,000	0.027	270	6.26%	91.47%
Wastage	200	0.422	84	1.95%	99.69%
Cash Flow Financing	10,000	0.001	14	0.31%	100.00%
Other Operating Expenses	10,000	0.000	0	0.00%	100.00%
Total Operating Expenses			4,315	100%	100%
Operating Profit (Loss)			245		

Important Financial Statistics

Breakeven Selling Price	2.27
Breakeven Wholesale Price	0.32
Operating Margin	0.05

Notes:

(a) Kilograms
(b) Unit cost per kilogram
(c) Proportion (percentage) of total operating costs
(d) Cumulative percentage of total operating costs

Scenario Three: Poor Quality Produce
(10% Wastage and Selling Price Down by 5%)

Inputs for Scenario Three

SAMPLE PRINTOUT: CASE 1

Sales in Kilograms	10,000
First Receiver Price (in fc/kg)	2.85
Exchange Rate (fc/JD)	0.19

("fc" = foreign currency)

Income Statement

Revenues

First Receiver Price (JD/kg)	0.54				
Sales in kg	10,000				
Total Sales			5,415		

Operating Expenses

	(a)	(b)		(c)	(d)
Cost Of Produce	10,000	0.300	3,000	63.74%	63.74%
Local Regulatory Cost	10,000	0.006	62	1.31%	65.05%
Transport to Workshop	10,000	0.001	5	0.11%	65.15%
Post–Harvest Labor	10,000	0.005	50	1.06%	66.22%
Packaging / Labels	10,000	0.004	40	0.85%	67.07%
Cold–Storage	10,000	0.000	0	0.00%	67.07%
Palletizing	10,000	0.000	0	0.00%	67.07%
Transport To Export Point	10,000	0.000	0	0.00%	67.07%
Transport Agent Commision	10,000	0.000	0	0.00%	67.07%
International Transport	10,000	0.076	760	16.15%	83.21%
Destination Regulatory Cost	10,000	0.000	0	0.00%	83.21%
Destination Unloading Cost	10,000	0.003	30	0.64%	83.85%
Destination Commission Cost	10,000	0.032	320	6.80%	83.85%
Wastage	1,000	0.427	427	9.06%	99.71%
Cash Flow Financing	10,000	0.001	14	0.29%	100.00%
Other Operating Expenses	10,000	0.000	0	0.00%	100.00%
Total Operating Expenses			4,707	100%	100%
Operating Profit (Loss)			708		

Important Financial Statistics

Breakeven Selling Price	2.48
Breakeven Wholesale Price	0.37
Operating Margin	0.13

Notes:

(a) Kilograms
(b) Unit cost per kilogram
(c) Proportion (percentage) of total operating costs
(d) Cumulative percentage of total operating costs

Scenario Four: Destination Market Saturated
(Selling Price Down by 10%)

Inputs for Scenario Four

SAMPLE PRINTOUT: CASE 1

Sales in Kilograms	10,000
First Receiver Price (in fc/kg)	2.70
Exchange Rate (fc/JD)	0.19

("fc" = foreign currency)

Income Statement

Revenues					
First Receiver Price (JD/kg)	0.51				
Sales in kg	10,000				
Total Sales			5,130		
Operating Expenses					
	(a)	(b)		(c)	(d)
Cost Of Produce	10,000	0.300	3,000	68.88%	68.88%
Local Regulatory Cost	10,000	0.006	62	1.42%	70.30%
Transport to Workshop	10,000	0.001	5	0.11%	70.41%
Post–Harvest Labor	10,000	0.005	50	1.15%	71.56%
Packaging / Labels	10,000	0.004	40	0.92%	72.48%
Cold–Storage	10,000	0.000	0	0.00%	72.48%
Palletizing	10,000	0.000	0	0.00%	72.48%
Transport To Export Point	10,000	0.000	0	0.00%	72.48%
Transport Agent Commision	10,000	0.000	0	0.00%	72.48%
International Transport	10,000	0.076	760	17.45%	89.93%
Destination Regulatory Cost	10,000	0.000	0	0.00%	89.93%
Destination Unloading Cost	10,000	0.003	30	0.69%	90.62%
Destination Commission Cost	10,000	0.031	310	7.12%	90.62%
Wastage	200	0.426	85	1.95%	99.69%
Cash Flow Financing	10,000	0.001	14	0.31%	100.00%
Other Operating Expenses	10,000	0.000	0	0.00%	100.00%
Total Operating Expenses			4,355	100%	100%
Operating Profit (Loss)			775		
Important Financial Statistics					
Breakeven Selling Price			2.29		
Breakeven Wholesale Price			0.38		
Operating Margin			0.15		

Notes:

(a) Kilograms
(b) Unit cost per kilogram
(c) Proportion (percentage) of total operating costs
(d) Cumulative percentage of total operating costs

Scenario Five: Destination Demand High
(Selling Price Up By 10%)

Inputs for Scenario Five

SAMPLE PRINTOUT: CASE 1

Sales in Kilograms	10,000
First Receiver Price (in fc/kg)	3.30
Exchange Rate (fc/JD)	0.19

("fc" = foreign currency)

Income Statement

Revenues

First Receiver Price (JD/kg)	0.63				
Sales in kg	10,000				
Total Sales			6,270		

Operating Expenses

	(a)	(b)		(c)	(d)
Cost Of Produce	10,000	0.300	3,000	67.77%	67.77%
Local Regulatory Cost	10,000	0.006	62	1.40%	69.16%
Transport to Workshop	10,000	0.001	5	0.11%	69.28%
Post–Harvest Labor	10,000	0.005	50	1.13%	70.41%
Packaging / Labels	10,000	0.004	40	0.90%	71.31%
Cold–Storage	10,000	0.000	0	0.00%	71.31%
Palletizing	10,000	0.000	0	0.00%	71.31%
Transport To Export Point	10,000	0.000	0	0.00%	71.31%
Transport Agent Commision	10,000	0.000	0	0.00%	71.31%
International Transport	10,000	0.076	760	17.17%	88.48%
Destination Regulatory Cost	10,000	0.000	0	0.00%	88.48%
Destination Unloading Cost	10,000	0.003	30	0.68%	89.16%
Destination Commission Cost	10,000	0.038	380	8.58%	89.16%
Wastage	200	0.433	87	1.95%	99.69%
Cash Flow Financing	10,000	0.001	14	0.31%	100.00%
Other Operating Expenses	10,000	0.000	0	0.00%	100.00%
Total Operating Expenses			4,427	100%	100%
Operating Profit (Loss)			1,843		

Important Financial Statistics

Breakeven Selling Price	2.33
Breakeven Wholesale Price	0.48
Operating Margin	0.29

Notes:

(a) Kilograms
(b) Unit cost per kilogram
(c) Proportion (percentage) of total operating costs
(d) Cumulative percentage of total operating costs

Risk Analysis Template Summary: Produce To Dubai

Inputs for Base Case:

SAMPLE PRINTOUT: CASE 2

10,000	Sales in Kilograms (KG)
2.50	Selling Price (Rials/KG)
0.30	Wholesale Cost (JD/KG)

OUTPUT SUMMARY

(A) Operating Margin (%)	(B) Breakeven Wholesale Price (JD/KG)	(C) Breakeven Selling Price (FC/KG)	(D) Case Number And Description
8%	0.34	2.31	1. Base Case Input Wholesale & Selling Prices
−14%	0.25	2.27	2. Shipment Delay Selling Price Down 20%
−4%	0.28	2.48	3. Poor Quality Produce 10% Wastage & Selling Price Down 5%.
−2%	0.29	2.29	4. Destination Market Saturated Selling Price Down 10%.
15%	0.38	2.33	5 High Demand in Destination Market Selling Price Up 10%.

Notes:

(A) Operating Margin: Revenues − Operating Expenses (Operating Profit) divided by Revenues Expressed in Percentage Terms

(B) Breakeven Wholesale Price in JD/KG given the destination price. This is the maximum wholesale price affordable given the selling price

(C) Breakeven Destination Price (in Rials/KG) Given the Wholesale Price. This is the minimum selling price required given the wholesale price.

(D) Case Number and Description of the case. Case Numbers match with the Template Numbers.

Scenario One: Base Case

Inputs for Scenario One

SAMPLE PRINTOUT: CASE 2

Sales in Kilograms	10,000
First Receiver Price (in fc/kg)	2.50
Exchange Rate (fc/JD)	0.19

("fc" = foreign currency)

Income Statement

Revenues					
First Receiver Price (JD/kg)	0.48				
Sales in kg	10,000				
Total Sales			4,750		
Operating Expenses					
	(a)	(b)		(c)	(d)
Cost Of Produce	10,000	0.300	3,000	68.40%	68.40%
Local Regulatory Cost	10,000	0.006	62	1.41%	69.81%
Transport to Workshop	10,000	0.001	5	0.11%	69.92%
Post–Harvest Labor	10,000	0.005	50	1.14%	71.06%
Packaging / Labels	10,000	0.004	40	0.91%	71.97%
Cold–Storage	10,000	0.000	0	0.00%	71.97%
Palletizing	10,000	0.000	0	0.00%	71.97%
Transport To Export Point	10,000	0.000	0	0.00%	71.97%
Transport Agent Commision	10,000	0.000	0	0.00%	71.97%
International Transport	10,000	0.076	760	17.33%	89.30%
Destination Regulatory Cost	10,000	0.000	0	0.00%	89.30%
Destination Unloading Cost	10,000	0.003	30	0.68%	89.99%
Destination Commission Cost	10,000	0.034	340	7.75%	89.99%
Wastage	200	0.429	86	1.95%	99.69%
Cash Flow Financing	10,000	0.001	14	0.31%	100.00%
Other Operating Expenses	10,000	0.000	0	0.00%	100.00%
Total Operating Expenses			4,386	100%	100%
Operating Profit (Loss)			364		
Important Financial Statistics					
Breakeven Selling Price			2.31		
Breakeven Wholesale Price			0.34		
Operating Margin			0.08		

Notes:

(a) Kilograms
(b) Unit cost per kilogram
(c) Proportion (percentage) of total operating costs
(d) Cumulative percentage of total operating costs

Scenario Two: Shipment Delay
(Selling Price Down by 20%)

Inputs for Scenario Two

SAMPLE PRINTOUT: CASE 2

Sales in Kilograms	10,000
First Receiver Price (in fc/kg)	2.00
Exchange Rate (fc/JD)	0.19

("fc" = foreign currency)

Income Statement

Revenues					
First Receiver Price (JD/kg)	0.38				
Sales in kg	10,000				
Total Sales			3,800		
Operating Expenses					
	(a)	(b)		(c)	(d)
Cost Of Produce	10,000	0.300	3,000	69.53%	69.53%
Local Regulatory Cost	10,000	0.006	62	1.43%	70.96%
Transport to Workshop	10,000	0.001	5	0.12%	71.08%
Post–Harvest Labor	10,000	0.005	50	1.16%	72.24%
Packaging / Labels	10,000	0.004	40	0.93%	73.16%
Cold–Storage	10,000	0.000	0	0.00%	73.16%
Palletizing	10,000	0.000	0	0.00%	73.16%
Transport To Export Point	10,000	0.000	0	0.00%	73.16%
Transport Agent Commision	10,000	0.000	0	0.00%	73.16%
International Transport	10,000	0.076	760	17.61%	90.78%
Destination Regulatory Cost	10,000	0.000	0	0.00%	90.78%
Destination Unloading Cost	10,000	0.003	30	0.70%	91.47%
Destination Commission Cost	10,000	0.027	270	6.26%	91.47%
Wastage	200	0.422	84	1.95%	99.69%
Cash Flow Financing	10,000	0.001	14	0.31%	100.00%
Other Operating Expenses	10,000	0.000	0	0.00%	100.00%
Total Operating Expenses			4,315	100%	100%
Operating Profit (Loss)			(515)		
Important Financial Statistics					
Breakeven Selling Price			2.27		
Breakeven Wholesale Price			0.25		
Operating Margin			−0.14		

Notes:

(a) Kilograms
(b) Unit cost per kilogram
(c) Proportion (percentage) of total operating costs
(d) Cumulative percentage of total operating costs

Scenario Three: Poor Quality Produce
(10% Wastage and Selling Price Down by 5%)

Inputs for Scenario Three

SAMPLE PRINTOUT: CASE 2

Sales in Kilograms	10,000
First Receiver Price (in fc/kg)	2.38
Exchange Rate (fc/JD)	0.19

("fc" = foreign currency)

Income Statement

Revenues					
First Receiver Price (JD/kg)	0.45				
Sales in kg	10,000				
Total Sales			4,513		
Operating Expenses					
	(a)	(b)		(c)	(d)
Cost Of Produce	10,000	0.300	3,000	63.74%	63.74%
Local Regulatory Cost	10,000	0.006	62	1.31%	65.05%
Transport to Workshop	10,000	0.001	5	0.11%	65.15%
Post–Harvest Labor	10,000	0.005	50	1.06%	66.22%
Packaging / Labels	10,000	0.004	40	0.85%	67.07%
Cold–Storage	10,000	0.000	0	0.00%	67.07%
Palletizing	10,000	0.000	0	0.00%	67.07%
Transport To Export Point	10,000	0.000	0	0.00%	67.07%
Transport Agent Commision	10,000	0.000	0	0.00%	67.07%
International Transport	10,000	0.076	760	16.15%	83.21%
Destination Regulatory Cost	10,000	0.000	0	0.00%	83.21%
Destination Unloading Cost	10,000	0.003	30	0.64%	83.85%
Destination Commission Cost	10,000	0.032	320	6.80%	83.85%
Wastage	1,000	0.427	427	9.06%	99.71%
Cash Flow Financing	10,000	0.001	14	0.29%	100.00%
Other Operating Expenses	10,000	0.000	0	0.00%	100.00%
Total Operating Expenses			4,707	100%	100%
Operating Profit (Loss)			(194)		
Important Financial Statistics					
Breakeven Selling Price			2.48		
Breakeven Wholesale Price			0.28		
Operating Margin			–0.04		

Notes:

(a) Kilograms
(b) Unit cost per kilogram
(c) Proportion (percentage) of total operating costs
(d) Cumulative percentage of total operating costs

Scenario Four: Destination Market Saturated
(Selling Price Down by 10%)

Inputs for Scenario Four

SAMPLE PRINTOUT: CASE 2

Sales in Kilograms	10,000
First Receiver Price (in fc/kg)	2.25
Exchange Rate (fc/JD)	0.19

("fc" = foreign currency)

Income Statement

Revenues

First Receiver Price (JD/kg)	0.43				
Sales in kg	10,000				
Total Sales			4,275		
Operating Expenses					
	(a)	(b)		(c)	(d)
Cost Of Produce	10,000	0.300	3,000	68.88%	68.88%
Local Regulatory Cost	10,000	0.006	62	1.42%	70.30%
Transport to Workshop	10,000	0.001	5	0.11%	70.41%
Post–Harvest Labor	10,000	0.005	50	1.15%	71.56%
Packaging / Labels	10,000	0.004	40	0.92%	72.48%
Cold–Storage	10,000	0.000	0	0.00%	72.48%
Palletizing	10,000	0.000	0	0.00%	72.48%
Transport To Export Point	10,000	0.000	0	0.00%	72.48%
Transport Agent Commision	10,000	0.000	0	0.00%	72.48%
International Transport	10,000	0.076	760	17.45%	89.93%
Destination Regulatory Cost	10,000	0.000	0	0.00%	89.93%
Destination Unloading Cost	10,000	0.003	30	0.69%	90.62%
Destination Commission Cost	10,000	0.031	310	7.12%	90.62%
Wastage	200	0.426	85	1.95%	99.69%
Cash Flow Financing	10,000	0.001	14	0.31%	100.00%
Other Operating Expenses	10,000	0.000	0	0.00%	100.00%
Total Operating Expenses			4,355	100%	100%
Operating Profit (Loss)			(80)		

Important Financial Statistics

Breakeven Selling Price	2.29
Breakeven Wholesale Price	0.29
Operating Margin	−0.02

Notes:

(a) Kilograms
(b) Unit cost per kilogram
(c) Proportion (percentage) of total operating costs
(d) Cumulative percentage of total operating costs

Scenario Five: Destination Demand High
(Selling Price Up By 10%)

Inputs for Scenario Five

SAMPLE PRINTOUT: CASE 2

Sales in Kilograms	10,000
First Receiver Price (in fc/kg)	2.75
Exchange Rate (fc/JD)	0.19

("fc" = foreign currency)

Income Statement

Revenues					
First Receiver Price (JD/kg)	0.52				
Sales in kg	10,000				
Total Sales			5,225		
Operating Expenses					
	(a)	(b)		(c)	(d)
Cost Of Produce	10,000	0.300	3,000	67.77%	67.77%
Local Regulatory Cost	10,000	0.006	62	1.40%	69.16%
Transport to Workshop	10,000	0.001	5	0.11%	69.28%
Post–Harvest Labor	10,000	0.005	50	1.13%	70.41%
Packaging / Labels	10,000	0.004	40	0.90%	71.31%
Cold–Storage	10,000	0.000	0	0.00%	71.31%
Palletizing	10,000	0.000	0	0.00%	71.31%
Transport To Export Point	10,000	0.000	0	0.00%	71.31%
Transport Agent Commision	10,000	0.000	0	0.00%	71.31%
International Transport	10,000	0.076	760	17.17%	88.48%
Destination Regulatory Cost	10,000	0.000	0	0.00%	88.48%
Destination Unloading Cost	10,000	0.003	30	0.68%	89.16%
Destination Commission Cost	10,000	0.038	380	8.58%	89.16%
Wastage	200	0.433	87	1.95%	99.69%
Cash Flow Financing	10,000	0.001	14	0.31%	100.00%
Other Operating Expenses	10,000	0.000	0	0.00%	100.00%
Total Operating Expenses			4,427	100%	100%
Operating Profit (Loss)			798		
Important Financial Statistics					
Breakeven Selling Price			2.33		
Breakeven Wholesale Price			0.38		
Operating Margin			0.15		

Notes:

(a) Kilograms
(b) Unit cost per kilogram
(c) Proportion (percentage) of total operating costs
(d) Cumulative percentage of total operating costs

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A Method For Enterprise-Level Risk Analysis for Horticultural Exporters in Jordan

Risk Matrix Tables

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GLOSSARY OF TERMS USED IN RISK MATRIX TABLES

OPERATING MARGIN:	Operating Profit / Revenues expressed in percentage terms.
SELLING PRICES:	The destination "first Receiver" prices obtained by the exporters.
MODAL:	Most frequently reported or recorded.
PURCHASE COST:	The unit cost of produce or farmgate or wholesale price paid by the exporter.
JORDAN VALLEY:	The Modal unit purchase cost reported for Jordan Valley produce.
HIGHLANDS:	The Modal unit purchase cost reported for Highland produce.
EARLY JUNE '94:	The purchase cost and selling prices reported for Early June '94.
AMO LOW & HIGH '93:	The lowest and highest weighted unit purchase recorded by AMO for the Amman Wholesale Market in 1993. For Gulf exports, only the months of May through August are considered. For European Exports, only the months October to April are considered.
BREAKEVEN COST:	The unit purchase cost at which the given destination selling price yields a 0% margin. It is the maximum unit purchase cost an exporter can afford to pay for that selling price, holding marketing costs constant.
BREAKEVEN PURCHASE COST SPREAD:	The percentage difference between the highest and the lowest unit purchase cost which yield a 0% margin, given the selling prices reported. The bigger the spread, the larger the range between selling prices reported.
BREAKEVEN PRICE:	The selling price at which the unit purchase cost yields a 0% margin. It is the minimum selling price an exporter must seek for that unit purchase cost, holding marketing costs constant.
BREAKEVEN SELLING PRICE SPREAD:	The percentage difference between the highest and the lowest selling price which yield a 0% margin, given the unit purchase costs reported. The bigger the spread, the larger the range between unit purchase costs used (reported).

INDEX TO RISK MATRIX TABLES

Table 1: Operating Margins and Breakeven Prices For Tomatoes To Dubai

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(317)	(59)	12	(39)	1.09 R
Highlands	(251)	(35)	25	(18)	0.92 R
AMO Low '93	(163)	(21)	43	(11)	0.68 R
AMO High '93	(361)	(76)	3	(54)	1.21 R
Early June '94	(185)	(10)	38	3	0.74 R
Breakeven Cost	0 JD	.028 JD	.126 JD	.045 JD	

Observations: Profit potential using only the maximum selling prices.
Breakeven Purchase Cost Spread = over 100%, Very High Risk
Breakeven Selling Price Spread = 43%, Medium Risk

Table 2: Operating Margins And Breakeven Prices Cucumbers To Dubai

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(266)	(50)	11	(168)	2.14 R
Highlands	(178)	(15)	32	(12)	1.62 R
AMO Low '93	(30)	44	65	3	0.74 R
AMO High '93	(266)	(50)	11	(168)	2.14 R
Early June '94	(188)	(19)	29	(16)	1.68 R
Breakeven Cost	0 JD	.152 JD	.330 JD	.160 JD	

Observations: Profit potential using maximum selling prices. AMO Low '93 purchase prices yield good margins.
Breakeven Purchase Cost Spread = Over 100%, Very High Risk
Breakeven Selling Price Spread = 65%, Medium Risk

Table 3: Operating Margins And Breakeven Prices For Squash To Dubai

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(167)	7	51	(24)	1.97 R
Highlands	(113)	25	60	1	1.56 R
AMO Low '93	(12)	59	76	46	0.80 R
AMO High '93	(237)	(16)	39	(56)	2.50 R
Early June '94	(198)	(3)	46	(38)	2.20 R
Breakeven Cost	.034 JD	.280 JD	.645 JD	.182 JD	

Observations: Significant profit potential for many purchase cost / selling prices combinations.
Breakeven Purchase Cost Spread = 94%, High Risk
Breakeven Selling Price Spread = 68%, Medium Risk

Table 4: Operating Margins And Breakeven Prices For Green Beans To Dubai

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(256)	(31)	6	(23)	3.72 R
Highlands	(113)	20	42	25	2.20 R
AMO Low '93	(36)	47	61	51	1.39 R
AMO High '93	(322)	(55)	(10)	(45)	4.45 R
Early June '94	152	6	32	12	2.62 R
Breakeven Cost	.085 JD	.390 JD	.595 JD	.425 JD	

Observations: Profit potential using Highland produce.
Breakeven Purchase Cost Spread = 85%, High Risk
Breakeven Selling Price Spread = 68%, Medium Risk

Table 5: Operating Margins And Breakeven Prices For Eggplants To Dubai

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(83)	31	45	6	1.56 R
Highlands	(50)	43	54	23	1.27 R
AMO Low '93	3	62	69	49	0.80 R
AMO High '93	(96)	26	41	0	1.67 R
Early June '94	(17)	55	63	39	0.98 R
Breakeven Cost	.055 JD	.310 JD	.425 JD	.200 JD	

Observations: Profitable for most purchase/selling prices combinations
Breakeven Purchase Cost Spread = 87%, High Risk
Breakeven Selling Price Spread = 52%, Medium Risk

Table 6: Operating Margins And Breakeven Prices For Capsicums To Dubai

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(34)	26	48	(24)	2.72 R
Highlands	(10)	39	57	(2)	2.20 R
AMO Low '93	51	71	79	54	0.92 R
AMO High '93	12	51	65	19	1.74 R
Early June '94	21	55	68	26	1.56 R
Breakeven Cost	.255 JD	.560 JD	.870 JD	.285 JD	

Observations: Profitable for most combinations, including AMO High '93 costs.
Breakeven Purchase Cost Spread = 70%, High Risk
Breakeven Selling Price Spread = 66%, Medium Risk

Table 7: Operating Margins And Breakeven Prices For Peppers (Hot) To Dubai

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Modal	(47)	29	52	23	1.50 R
AMO Low '93	13	57	70	54	0.86 R
AMO High '93	(102)	4	35	(4)	2.08 R
Early June '94	(69)	19	45	12	1.74 R
Breakeven Cost	.085 JD	.285 JD	.480 JD	.255 JD	

Observations: Profit using Modal costs and prices.
Breakeven Purchase Cost Spread = 82%, High Risk
Breakeven Selling Price Spread = 58%, Medium Risk

Table 8: Operating Margins And Breakeven Prices For Watermelons To Dubai

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Modal	(111)	(111)	(43)		1.09 R
AMO Low '93	(45)	(45)	1		0.74 R
AMO High '93	(232)	(232)	(124)		1.74 R
Early June '94					
Breakeven Cost	0 JD	0 JD	,040 JD		

Observations: Not profitable
Breakeven Purchase Cost Spread = Over 100%, Very High Risk
Breakeven Selling Price Spread = 57%, Medium Risk

Table 9: Operating Margins And Breakeven Prices For Oranges (Local) To Dubai

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Modal	(16)	5	10	(25)	1.68 R
AMO Low '93	(8)	12	16	(16)	1.56 R
AMO High '93	(92)	(56)	(48)	(107)	2.85 R
Early June '94	(23)	(1)	5	(33)	1.80 R
Breakeven Cost	.160 JD	.218 JD	.235 JD	.140 JD	

Observations: Profitable at Maximum selling Prices only
Breakeven Purchase Cost Spread = 40%, Medium Risk
Breakeven Selling Price Spread = 45%, Medium Risk

Table 10: Operating Margins And Breakeven Prices For Oranges (Gaza) To Dubai

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Modal	(50)	(22)	(13)	0	1.86 R
AMO Low '93	(18)	3	31	21	1.45 R
AMO High '93	(86)	(52)	(8)	23	2.33 R
Early June '94	(50)	22	13	0	1.86 R
Breakeven Cost	.120 JD	.170 JD	.280 JD	.230 JD	

Observations: Profitable using Maximum selling Prices
Breakeven Purchase Cost Spread = 64%, Medium Risk
Breakeven Selling Price Spread = 37%, Low Risk

Table 11: Operating Margins And Breakeven Prices For Tomatoes To Qatar

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(290)	(49)	17	(31)	1.02 R
Highlands	(224)	(25)	30	(9)	0.85 R
AMO Low '93	(136)	8	48	19	0.86 R
AMO High '93	(334)	(66)	8	(45)	1.14 R
Early June '94	(158)	0	44	12	0.67 R
Breakeven Cost	0 JD	.040 JD	.14 JD	.057 JD	

Observations: Profitable using Maximum selling Prices and the Early June '94 Price and cost combination.
Breakeven Purchase Cost Spread = Over 100%, Very High Risk
Breakeven Selling Price Spread = 41%, Medium Risk

Table 12: Operating Margins And Breakeven Prices For Cucumbers To Qatar

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(254)	(45)	14	(41)	2.08 R
Highlands	(166)	(10)	34	(7)	1.55 R
AMO Low '93	(18)	49	68	50	0.67 R
AMO High '93	(254)	(45)	14	(41)	2.08 R
Early June '94	(176)	(14)	32	(11)	1.60 R
Breakeven Cost	.021 JD	.165 JD	.340 JD	.172 JD	

Observations: Profitable using maximum Prices, The AMO High '93 purchase cost is the same as the Modal cost for Jordan Valley produce.
Breakeven Purchase Cost Spread = 93%, High Risk
Breakeven Selling Price Spread = 67%, Medium Risk

Table 13: Operating Margins And Breakeven Prices For Squash To Qatar

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(157)	11	52	(20)	1.90 R
Highlands	(103)	29	61	5	1.49 R
AMO Low '93	(2)	62	78	50	0.73 R
AMO High '93	(227)	(13)	41	(51)	2.44 R
Early June '94	(188)	0	47	(34)	2.44 R
Breakeven Cost	.050 JD	.290 JD	.660 JD	.193 JD	

Observations: Profitable for many combinations.
Breakeven Purchase Cost Spread = 92%, High Risk
Breakeven Selling Price Spread = 70%, High Risk

Table 14: Operating Margins And Breakeven Prices For Green Beans To Qatar

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(249)	(29)	8	(21)	3.64 R
Highlands	(106)	22	44	27	2.14 R
AMO Low '93	(30)	50	63	53	1.32 R
AMO High '93	(315)	(52)	(8)	43	4.34 R
Early June '94	(145)	9	34	14	2.55 R
Breakeven Cost	.100 JD	.290 JD	.610 JD	.440 JD	

Observations: Highly profitable for many combinations
Breakeven Purchase Cost Spread = 83%, High Risk
Breakeven Selling Price Spread = 69%, Medium Risk

Table 15: Operating Margins And Breakeven Prices For Eggplants To Qatar

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(83)	34	47	10	1.49 R
Highlands	(42)	46	56	27	1.20 R
AMO Low '93	11	65	71	53	0.73 R
AMO High '93	(88)	29	44	4	1.60 R
Early June '94	(8)	57	66	43	0.90 R
Breakeven Cost	.067 JD	.330 JD	.440 JD	.210 JD	

Observations: Profitable all over, except for minimum selling price.
Breakeven Purchase Cost Spread = 84%, High Risk
Breakeven Selling Price Spread = 54%, Medium Risk

Table 16: Operating Margins And Breakeven Prices For Capsicums To Qatar

PURCHASE COST	SELLING PRICES				
	Minimum	Modal	Maximum	Early June '94	Breakeven Price
Jordan Valley	(31)	28	49	(21)	2.66 R
Highlands	(6)	41	58	2	2.14 R
AMO Low '93	54	73	80	57	0.85 R
AMO High '93	16	53	66	22	1.66 R
Early June '94	24	57	69	29	1.49 R
Breakeven Cost	.267 JD	.580 JD	.880 JD	.295 JD	

Observations: Highly profitable for many purchase cost / selling price combinations.
Breakeven Purchase Cost Spread = 69%, Medium Risk
Breakeven Selling Price Spread = 68%, Medium Risk

Table 17: Operating Margins And Breakeven Prices For Cucumbers To France

PURCHASE COST	SELLING PRICES			
	Minimum	Modal	Maximum	Breakeven Price
Minimum	5	10	24	$1.23
Modal	(1)	5	20	$1.30
Maximum	(15)	(8)	9	$1.48
AMO High 93	0	5	21	$1.30
Breakeven Cost	.294 JD	.340 JD	.520 JD	

Observations: Profitable for most combinations.
Breakeven Purchase Cost Spread = 43%, Medium Risk
Breakeven Selling Price Spread = 16%, Low Risk

Table 18: Operating Margins And Breakeven Prices For Squash To France

PURCHASE COST	SELLING PRICES			
	Minimum	Modal	Maximum	Breakeven Price
Minimum	14	30	41	$1.16
Modal	(2)	16	29	$1.38
Maximum	(13)	8	22	$1.52
AMO High 93	(19)	3	18	$1.60
Breakeven Cost	.330 JD	.540 JD	.740 JD	

Observations: Profitable for most combinations
Breakeven Purchase Cost Spread = 55%, Medium Risk
Breakeven Selling Price Spread = 27%, Low Risk

Table 19: Operating Margins And Breakeven Prices For Green Beans To France

PURCHASE COST	SELLING PRICES			
	Minimum	Modal	Maximum	Breakeven Price
Minimum	(14)	17	39	$1.82
Modal	(46)	(6)	22	$2.34
Maximum	(92)	(39)	(21)	$3.06
AMO High 93	(48)	(7)	21	$2.36
Breakeven Cost	.500 JD	.910 JD	1.450 JD	

Observations: Selected profitability possibilities.
Breakeven Purchase Cost Spread = 65%, Medium Risk
Breakeven Selling Price Spread = 40%, Medium Risk

Table 20: Operating Margins And Breakeven Prices For Eggplants (Classic from Open Fields) To France

PURCHASE COST	SELLING PRICES			
	Minimum	Modal	Maximum	Breakeven Price
Minimum				
Modal	17	28	32	$1.08
Maximum				
AMO High 93	4	17	22	$1.25
Breakeven Cost	.300 JD	.430 JD	.500 JD	

Observations: Profitable for all combinations reported.
Breakeven Purchase Cost Spread = 40%, Medium Risk

Table 21: Operating Margins And Breakeven Prices For Eggplants (Classic from Greenhouses) To France

PURCHASE COST	SELLING PRICES			
	Minimum	Modal	Maximum	Breakeven Price
Minimum				
Modal	15	31	46	$1.52
Maximum				
AMO High 93				
Breakeven Cost	.640 JD	.910 JD	1.320 JD	

Observations: Profitable for the Modal purchase cost and all prices reported.
Breakeven Purchase Cost Spread = 52%, Medium Risk

Table 22: Operating Margins And Breakeven Prices For Eggplants (Classic from Jordan Valley) To France

PURCHASE COST	SELLING PRICES			
	Minimum	Modal	Maximum	Breakeven Price
Minimum				
Modal	(2)	9	12	$1.82
Maximum				
AMO High 93				
Breakeven Cost	.630 JD	.770 JD	.820 JD	

Observations: Profitable, exempt the minimum selling price combination
Breakeven Purchase Cost Spread = 23%, Low Risk

Table 23: Operating Margins And Breakeven Prices For Eggplants (Classic from Highlands) To France

PURCHASE COST	SELLING PRICES			
	Minimum	Modal	Maximum	Breakeven Price
Minimum				
Modal	4	12	20	$1.32
Maximum				
AMO High 93				
Breakeven Cost	.390 JD	.480 JD	.580 JD	

Observations: Profitable for all combinations reported.
Breakeven Purchase Cost Spread = 32%, Low Risk

Table 25: Operating Margins And Breakeven Prices For Capsicums To France

PURCHASE COST	SELLING PRICES			
	Minimum	Modal	Maximum	Breakeven Price
Minimum				
Modal	0	11	11	$1.60
Maximum				
AMO High 93	11	21	21	$1.42
Breakeven Cost	.500 JD	.640 JD	.640 JD	

Observations: Profitable
Breakeven Purchase Cost Spread = 21%, Low Risk

Table 26: Operating Margins And Breakeven Prices For Grapes To France

PURCHASE COST	SELLING PRICES			
	Minimum	Modal	Maximum	Breakeven Price
Minimum	10	28	55	$1.60
Modal	1	21	51	$1.74
Maximum	(7)	15	47	$1.89
AMO High 93	27	42	64	$1.29
Breakeven Cost	.620 JD	.930 JD	1.820 JD	

Observations: Profitable for all except the minimum selling price and maximum cost combination
Breakeven Purchase Cost Spread = 65%, Medium Risk
Breakeven Selling Price Spread = 31%, Low Risk

Table 27: Operating Margins And Breakeven Prices For Cucumbers To United Kingdom

PURCHASE COST	SELLING PRICES (from Fresh Produce Journal)			
	Minimum (Oct '93 - Apr '94)	Modal	Maximum (Oct '93 - Apr '94)	Breakeven Price
Minimum	(65)		38	$1.29
Modal	(75)		34	$1.36
Maximum	(97)		26	$1.54
AMO High 93	(74)		35	$1.36
Breakeven Cost	0 JD		.790 JD	

Observations: Profitable at Maximum selling prices.
Breakeven Purchase Cost Spread = Over 100%, Very High Risk
Breakeven Selling Price Spread = 16%, Low Risk

Table 28: Operating Margins And Breakeven Prices For Green Beans (from Ghor Safi) To United Kingdom

PURCHASE COST	SELLING PRICES (from Fresh Produce Journal)			
	Minimum (Oct '93 - Apr '94)	Modal	Maximum (Oct '93 - Apr '94)	Breakeven Price
Minimum	11		42	$1.88
Modal	(14)		25	$2.40
Maximum	(49)		3	$3.14
AMO High 93	(15)		25	$2.40
Breakeven Cost	.800 JD		1.56 JD	

Observations: Profitable at maximum prices.
Breakeven Purchase Cost Spread = 48%, Medium Risk
Breakeven Selling Price Spread = 40%, Medium Risk

Table 29: Operating Margins And Breakeven Prices For Eggplants (Classic) To United Kingdom

PURCHASE COST	SELLING PRICES (from Fresh Produce Journal)			
	Minimum (Oct '93 - Apr '94)	Modal	Maximum (Oct '93 - Apr '94)	Breakeven Price
Minimum	15		53	$1.14
Modal	(7)		41	$1.43
Maximum	(40)		22	$1.87
AMO High 93	3		46	$1.30
Breakeven Cost	.280 JD		1.02 JD	

Observations: Highly profitable at maximum prices
Breakeven Purchase Cost Spread = 72%, High Risk
Breakeven Selling Price Spread = 30%,, Low Risk

Table 30: Operating Margins And Breakeven Prices For Capsicums To United Kingdom

PURCHASE COST	SELLING PRICES (from Fresh Produce Journal)			
	Minimum (Oct '93 - Apr '94)	Modal	Maximum (Oct '93 - Apr '94)	Breakeven Price
Minimum				
Modal	(64)		13	$1.66
Maximum				
AMO High 93	(46)		22	$1.48
Breakeven Cost	.060 JD		.670 JD	

Observations: Marginally profitable.
Breakeven Purchase Cost Spread = 10%, Low Risk