

Rehabilitating Agriculture in Afghanistan

HORTICULTURAL MARKET SURVEY

Submitted to:

**International Center for Agricultural Research in the Dry Areas
(ICARDA)**

and

**Future Harvest Consortium
to Rebuild Agriculture in Afghanistan
(FHCRAA)**

October 2003

Prepared by:

**International Programs Office
College of Agricultural & Environmental Sciences
University of California, Davis**

Funded by:

The United States Agency for International Development (USAID)

Table of Contents

Pdf File 

- I. [EXECUTIVE SUMMARY](#) *129 Kb*
- II. [INTRODUCTION](#) *120 Kb*
- III. [MOST PROMISING CROPS FOR INTERNAL AND EXPORT INCOME GENERATION](#) *126 Kb*
- IV. [MOST CRITICAL CONSTRAINTS TO PRODUCTION](#) *85 Kb*
- V. [ECONOMIC AND SOCIAL RATE OF RETURN ON INVESTMENTS](#) *153 Kb*
- VI. [KEY CONSTRAINTS TO MARKET PROFITABILITY AND LONG TERM SUSTAINABILITY](#) *84 Kb*
- VII. [CASE STUDY: CADG Raisin Exports](#) *83 Kb*
- VIII. [RECOMMENDATIONS FOR INVESTMENT](#) *129 Kb*
- IX. **APPENDICES**
 - A. [1976 Afghanistan Horticultural Benchmarking Study](#) *177 Kb*
 - B. [Export Opportunities for Horticulture in Afghanistan](#) *294 Kb*
 - C. [Interview: US Importer of Afghan Products](#) *95 Kb*
 - D. [Preliminary Kabul Horticulture Market Assessment](#) *110 Kb*
 - E. [Preliminary Assessment Survey of Horticultural Crop Production and Marketing in Afghanistan](#) *119 Kb*
 - F. [Horticulture Market Survey - Production Capacity](#) *155 Kb*

I. EXECUTIVE SUMMARY

In 1976, horticulture was the single largest contributor to exports in the Afghanistan economy, comprising 40% of total export earnings. However, over the past 20 years, Afghanistan has been devastated by conflict and a debilitating three-year drought which have resulted in the collapse of the economy, destruction of infrastructure, massive displacement of the population, and widespread malnutrition and dependence on food aid. This market survey is conducted to identify trade opportunities for Afghan horticultural products and to determine the steps that need to be undertaken to develop a viable and market-oriented horticultural sector.

The activities undergone in this survey followed a three-step approach: *Market Assessment*; *Production Capability Assessment*; *Project Summary and Planning Document*. The resulting analysis and conclusions are presented as:

1. The most promising crops for both internal and export income generation;
2. The most critical constraints to production;
3. Economic and social rate of return on investments;
4. Key constraints to market profitability and long term sustainability;
5. Recommendations for investment.

The most promising crops for both internal and export income generation have been identified as:

- Dried Apricots
- Cumin
- Pine nuts
- Pomegranate
- Raisins
- Dried Figs
- Grapes
- Melons

Despite Afghanistan's long absence in the international horticulture market, this finding still coincides with several crops that historically led exports: grapes, pomegranate, melons and raisins (see Appendix A).

This study evaluated the most critical constraints to production as being:

- The lack of applied research capacity
- Diminished irrigation availability and distribution
- Poor input usage and production practices
- Limited enterprise management
- Lack of field extension capacity, institutions and agencies

The lack of available data made it impossible to calculate specific economic and social rates of return on investments. However, in-depth analysis of the supply and value chains revealed the operational feasibility and income potential of the selected crops.

Furthermore, the key constraints to market profitability and long term sustainability have been assessed as:

- Poor product quality
- The lack of post-harvest infrastructure
- The absence of marketing organizations
- Limited access to markets
- Commercial and financial limitations
- Non-uniformity of weights and measures

As a result, the following specific recommendations for investment are presented:

1. Develop research capabilities to support agriculture.
2. Provide extension services to effectively diagnose plant problems in the field.
3. Establish production and marketing centers for technical assistance.
4. Create marketing organizations to facilitate the education and training of farmers.
5. Build cold storage, packing and processing infrastructure.

III. MOST PROMISING CROPS FOR INTERNAL AND EXPORT INCOME GENERATION

The current state of production practices, post-harvest handling, and marketing activities limit immediate export opportunities to less perishable products and a few high-value fresh products. On the other hand, there exists the need to increase production of traditional fresh fruits and vegetables in order to meet the rise in domestic demand and compete successfully on a regional basis.

Export Market

By evaluating the operational feasibility and income potential of various products (Appendix B), and confirming this data with current international traders (Appendices B & C), we can identify crops with short and long term opportunities in the international market.

Short term Opportunities for Export

- Dried Apricots
- Cumin
- Pine nuts
- Pomegranate
- Raisins

Long term Opportunities for Export

- Dried Figs
- Grapes
- Melons

These crops coincide largely with the exports that historically led the Afghan market (see Appendix A). Back in 1976, raisins by far led horticultural exports, accounting for 90% of the value of total dry fruit exports and 31% of the value of total agricultural exports. The other leading export products were grapes, pomegranates, melons, almonds and pistachios. Afghanistan's absence in the international market and the increased presence of key producing nations have made almonds and pistachios less competitive globally.

The increasing global demand for quality products and unique attributes acts as a double-edge sword for Afghan horticulture. While on the one hand it opens the door to potential markets, on the other hand it severely punishes its lack of quality due to poor production practices and post-harvest handling. Most traders, both exporters and importers, agree that given proper product processing, Afghan crops such as raisins and dried apricots possess sufficient differentiation in their inherent attributes to attract new markets and draw premium prices (see Appendix C).

Domestic Market

Afghanistan is not yet self-sufficient in food. Although, the variety of crops produced generally satisfies the market needs, there is unmet domestic demand for the volume of basic vegetable commodities such as potatoes, onions, carrots and tomatoes. Undoubtedly, increased production of these crops will help satisfy this demand. However, we cannot

ignore the fact that this is aggravated by the lack of post-harvest and storage facilities. This leads to market inefficiencies, poor distribution and the need to import (often re-import domestically grown products) in order to meet off-season demand.

II. INTRODUCTION

Afghanistan is only recently emerging from over two decades of war and five years of drought, resulting in a devastated economy and vast deterioration of its infrastructure, industrial plants, irrigation systems, orchards and agricultural production lands. It is within this context that a pragmatic approach was utilized to prepare this market study.

Methodology

The activities of this market survey followed a three step approach. The individual reports produced are found in the Appendices.

Step I – Market Assessment

Using a combination of field investigation, key informants, and published information, surveys were conducted to scope out and prioritize current and potential markets for the most promising crops.

Step II – Production Capability Assessment

In parallel to Step I, the local production capacity and shipping qualities of these horticultural crops were assessed. Additionally, technical constraints to production and marketing were determined

Step III – Project Summary and Planning Document

Five to ten of most promising horticultural products were identified and relevant recommendations are developed.

Outputs

The resulting analysis and conclusions are presented as:

1. The most promising crops for both internal and export income generation;
2. The most critical constraints to production;
3. Economic and social rate of return on investments;
4. Key constraints to market profitability and long term sustainability;
5. Recommendations for investment.

IV. MOST CRITICAL CONSTRAINTS TO PRODUCTION

In general, horticulture production is recovering slowly from the destruction of the war, the drought, and destruction of irrigation systems. However, where there once was double and triple cropping, much farmland has either been reduced to single cropping or left uncultivated. Large areas of orchards and natural valuable forests and grazing lands have dried out, and some native germ-plasm may have been destroyed by drought. The available cultivated land in Kabul, for example, has been reduced to two-thirds.

Applied Research Capacity

There is a general lack of new plant material for research facilities and farmers. Some research farms have 80 to 90% of their orchards, nurseries and hot beds destroyed. As a result, there are not enough seedlings to be distributed to the farmers. In 1976, the Ministry of Agriculture had research farms in a number of provinces. The eleven main research stations were located in Kabul, Kandahar, Kapisa, Kunduz, Bamyan and Herat.

Irrigation Availability and Distribution

Water availability was historically the single scarcest resource and greatest constraint to expanding Afghan agriculture (see Appendix A). Currently, the underground water level all over Afghanistan has fallen considerably. Surface water for irrigation has diminished to half its capacity in northern areas and to very low levels in the southern and western parts of the country. In some regions, especially southern areas, orchards and vineyards have been uprooted for fuel because drought killed trees and vines.

The Kabul River, for example, has sufficient water supply for the irrigation of not only adjacent lands, but also those located further away. The Nangrahar Canal, built by the former Soviet Union in the early seventies, carries water to the more distant farms. The efficiency of this canal has been reduced to 50% of its former capacity.

Inputs and Production Practices

Producers tend to use traditional technology with unimproved or old plant material. While some producers appear open to adoption of new technologies—from plant material to production practices—producers generally have little education or capital. Although fertilizer and pesticides are available, high prices and the lack of credit prevent their use by most farmers. Farm machinery and tools are generally non-existent or rudimentary. Apparently, production practices have always been poor in Afghanistan. Low quality seed, the lack of variety improvements insufficient pest control, low use of micronutrients and poor farm management was widespread (see Appendix A).

Enterprise management

Farm record keeping is very limited, both with regard to input costs, labor allocation, yield, and marketing price. Farmers, therefore, have no basis for making enterprise mix decisions to increase farm income. A general lack of market information (supply, demand, pricing) contributes to poor decision making at the producer level.

Field Extension Capacity, Institutions and Agencies

Agriculture services, particularly agriculture extension and credit facilities are non-existent or very poor. There are neither farmer cooperatives nor government credits available to

farmers. The lack of a functional extension service or other institutions to teach people how to grow and use vegetables limit the ability to introduce new products education and capacity. Additionally, it seems that the diagnostic skills of Afghans involved in extension type positions with the Ministry of Agriculture, NGOs or other organizations are very weak. Field agents have difficulty identifying plant problems as disease, pest, stress, etc. Consequently, plant problems receive no or improper treatment.

V. ECONOMIC AND SOCIAL RATE OF RETURN ON INVESTMENTS

Given the current situation in Afghanistan, relevant quantifiable data (especially on production costs) is either unavailable or scarce; and often inaccurate or incomplete. This makes it impossible to calculate rates of return for specific investments. However, careful evaluation of both the supply and value chains of selected horticultural products (Appendices B, D, E & F) allows us to make a qualitative assessment of the “*Income Potential*” as well as the “*Operational Feasibility*” of each crop.

The Operational Feasibility (see table below) of each product is ranked by evaluating the supply chain; current Production Practices (costs, yields); current Product Quality (inherent product characteristics, presentation); and current state of Logistics (processing plants, grading, handling, cold storage, transport).

Ranking of Operational Feasibility				
PRODUCT	Production Practices	Product Quality	Logistics	OVERALL
<i>Primary</i>				
Almonds	●	●	●	●
Cumin	●	●	●	●
Figs (dried)	●	○	●	○
Grapes	○	●	○	○
Pine Nuts	●	●	●	●
Pistachios	○	●	●	●
Pomegranate	●	●	●	●
Raisins	●	●	●	●
Walnuts	●	●	●	●
<i>Secondary</i>				
Apples	○	●	○	○
Apricots (dried)	●	●	●	●
Apricots (fresh)	○	○	●	○
Melon	●	●	●	○
Onion	○	●	○	○
Potatoes	○	●	○	○
Tomatoes (dried)	●	●	●	●

Key: ○ = Low ● = Medium ● = High

The Income Potential (see table below) of each product is ranked by evaluating the value chain; its Competitiveness in the international market (cost, quality); the opportunity presented to easily capture value in the supply chain (grading, packaging, etc.); and by potential scalability and volume impact.

Ranking of Income Potential				
PRODUCT	International Competitive-ness	Opportunity for Value Capture	Scalability and Volume Impact	OVERALL
<i>Primary</i>				
Almonds	○	◐	◐	○
Cumin	◐	●	●	●
Figs (dried)	◐	●	◐	●
Grapes	◐	◐	●	●
Pine Nuts	●	●	◐	●
Pistachios	○	◐	◐	○
Pomegranate	●	◐	◐	●
Raisins	◐	●	●	●
Walnuts	◐	◐	◐	○
<i>Secondary</i>				
Apples	○	◐	◐	○
Apricots (dried)	◐	◐	●	●
Apricots (fresh)	○	○	●	○
Melon	◐	◐	●	●
Onion	○	◐	◐	○
Potatoes	○	◐	◐	○
Tomatoes (dried)	◐	◐	◐	○

Key: ○ = Low ◐ = Medium ● = High

V. ECONOMIC AND SOCIAL RATE OF RETURN ON INVESTMENTS

Given the current situation in Afghanistan, relevant quantifiable data (especially on production costs) is either unavailable or scarce; and often inaccurate or incomplete. This makes it impossible to calculate rates of return for specific investments. However, careful evaluation of both the supply and value chains of selected horticultural products (Appendices B, D, E & F) allows us to make a qualitative assessment of the “*Income Potential*” as well as the “*Operational Feasibility*” of each crop.

The Operational Feasibility (see table below) of each product is ranked by evaluating the supply chain; current Production Practices (costs, yields); current Product Quality (inherent product characteristics, presentation); and current state of Logistics (processing plants, grading, handling, cold storage, transport).

Ranking of Operational Feasibility				
PRODUCT	Production Practices	Product Quality	Logistics	OVERALL
<i>Primary</i>				
Almonds	●	●	●	●
Cumin	●	●	●	●
Figs (dried)	●	○	●	○
Grapes	○	●	○	○
Pine Nuts	●	●	●	●
Pistachios	○	●	●	●
Pomegranate	●	●	●	●
Raisins	●	●	●	●
Walnuts	●	●	●	●
<i>Secondary</i>				
Apples	○	●	○	○
Apricots (dried)	●	●	●	●
Apricots (fresh)	○	○	●	○
Melon	●	●	●	○
Onion	○	●	○	○
Potatoes	○	●	○	○
Tomatoes (dried)	●	●	●	●

Key: ○ = Low ● = Medium ● = High

The Income Potential (see table below) of each product is ranked by evaluating the value chain; its Competitiveness in the international market (cost, quality); the opportunity presented to easily capture value in the supply chain (grading, packaging, etc.); and by potential scalability and volume impact.

Ranking of Income Potential				
PRODUCT	International Competitive-ness	Opportunity for Value Capture	Scalability and Volume Impact	OVERALL
<i>Primary</i>				
Almonds	○	●	●	○
Cumin	●	●	●	●
Figs (dried)	●	●	○	●
Grapes	●	○	●	●
Pine Nuts	●	●	○	●
Pistachios	○	○	○	○
Pomegranate	●	○	○	●
Raisins	○	●	●	●
Walnuts	○	○	○	○
<i>Secondary</i>				
Apples	○	○	○	○
Apricots (dried)	●	○	●	●
Apricots (fresh)	○	○	●	○
Melon	○	○	●	●
Onion	○	○	○	○
Potatoes	○	○	○	○
Tomatoes (dried)	○	○	○	○

Key: ○ = Low ● = Medium ● = High

VI. KEY CONSTRAINTS TO MARKET PROFITABILITY AND LONG TERM SUSTAINABILITY

Quality

Little sorting, grading and cleaning of produce or other products takes place at the farm level. Poor processing, cleaning and packaging facilities all limit the ability for Afghanistan to produce a consistent quantity of quality product. Poor quality is not a new issue for Afghan horticulture. Historical data reveals that total export value was already decreasing due to serious quality problems across the board (see Appendix A).

Post-harvest Infrastructure

Lack of proper roads (limited or poor asphaltting, no highways), refrigerated trucks, cold storage facilities cripples Afghanistan's capability to reach better markets, capture value, control price volatility. The road system as well as the state of transport vehicles adversely impact input supply as well as product market access. Traditional post-harvest processing and storage technologies result in low and uneven quality product, as well as high spoilage. There are no significant cold storage facilities, and packing sheds and packaging units are scarce or primitive. Again we observe that processing and post-harvest constraints traditionally obstructed export growth for Afghan horticulture (see Appendix A). Similarly, in 1976 there was very limited produce grading, no cold storage facilities and no packing houses. Modern handling facilities were minimal resulting in losses due to spoilage, mishandling and lack of grading.

Marketing Organizations

There is an absence of institutions such as cooperatives, marketing associations, commodity organizations, to support and regulate market activities. There are neither farmer cooperatives nor government credits available to the farmers. Growers have little to no market information to make informed decisions. Traders are slightly better informed, but mostly limited by their interaction with Pakistani, and sometimes Indian traders. Given the current marketing practices, the value added is often earned by Pakistani merchants, as they sort, grade, and package the product for consumption in Pakistan and/or for re-export.

Access to Markets

Lack of market alternatives hinders Afghan traders' ability to capture value. Direct trading relationships are rare. Pakistani traders capture much of the value added. Indian middlemen often deal directly within Afghanistan. Even domestic processing options (juices, canned, etc.) do not exist to form a price floor for products.

Commercial / Financial Constraints

No commercial credit is available in the market. Producers lack the resources to finance harvest and marketing. Wholesalers selectively grant short-term credit to retailers. Fresh produce farmers often use unfavorable pre-harvest contracts to market their production. No banks exist to clear commercial transactions. Letters of Credit are non-existent. Money traders in Pakistan fill this void, but at higher costs. There's no product insurance, no commercial code and no legal contracts. Even in 1976 when the Development Bank of Afghanistan provided credit for growers, many of the land operators did not have the necessary collateral to take out a loan.

Weights and Measures

Lack of a common weights and measures system results in disputes and difficulty in price resolution. For example: 1 Man equals 4.5 kg in Kandahar, 7 kg in Kabul, 8 kg in Herat, and 10kg in Quetta. This often results in arguments, inaccurate market information, disputes over shipments, re-weighing, reloading and a general disruption in trade.

VII. CASE STUDY: CADG Raisin Exports

The Central Asia Development Group (CADG) is a private enterprise headquartered in Singapore. The small group of professionals has vast experience in exporting horticultural products from developing regions. In Afghanistan, they administer NGO funds and have succeeded in establishing export operations for raisins and vegetable seeds. Their main office is located in Kandahar while a large operational office is maintained in Helmand. Their raisin operation has been successful and proves the viability of Afghan horticultural exports.

The project started in July of 2002 with donor money. Utilizing an abandoned raisin processing plant in Helmand (which already had machinery of Californian origin), approximately \$75,000 was initially invested (excluding working capital). The project is expected to be self-sustaining and/or profitable sometime between November of 2003 and January of 2004

The operations model is a hybrid of Turkish and Californian systems, utilizing a 3-table sorting process and a clean – wash – clean process. The plant has averaged 80-100 tons of raisins per month; however, it is important to note that CADG has an unmet monthly demand of 200 tons.

CADG customers are currently located in the UK, Germany, Czechoslovakia and Taiwan. Lower transportation costs to the Far East should eventually allow Afghanistan to compete better against Turkey and Iran. However, given the Pakistani constraints (i.e. if you want to export out of Karachi, goods must travel by train), CADG often ships through Herat to the port of Bandar Abbas in Iran, and loads onto containers there.

Other potential market constraints identified by CADG include possible over-production by Turkey and Iran, driving prices down; and the common practice of Afghan traders over-speculating on price and sitting on their stock. CADG has also views corruption in the public sector as a significant detriment to their costs.

In summary, the key success factors for CADG have been the introduction of improved grape production practices; greater processing and quality control; and increased marketing activities (ex. international tradeshows, grower associations).

VIII. RECOMMENDATIONS FOR INVESTMENT

The recommendations presented provide a strategic direction for horticultural production in Afghanistan as well as identifying specific investments that would facilitate its sustainable growth. The investments recommended do not necessarily take into account the time frame and/or budget constraints of potential implementation projects.

The following crops have been identified as having the most potential and are recommended for farmers to produce and exporters to trade:

- Cumin
- Dried Apricots
- Dried Figs
- Grapes
- Melons
- Pine nuts
- Pomegranate
- Raisins

The production and commercialization of these crops alone do not guarantee socio-economic success and must be accompanied with other market developments to assure long term growth and sustainability. It is key to work with locally formed organizations – cooperatives, village councils, etc – in the implementation of these recommendations.

1. Develop research capabilities. Afghanistan needs to develop research capability to support agriculture. Re-developing research farm facilities at Kabul University would initiate this process. The facilities would be used to test, adapt, and develop technologies for application to Afghan production systems. It also would be a gateway to integration of applied education to university agriculture education. extension, training.
2. Provide extension services. Extension personnel lack the skills and confidence to effectively diagnose plant problems in the field, and back up resources for consultation or support are non-existent. A coordinated effort to develop in service training capacity for individuals involved in agricultural outreach (extension, NGOs) is needed. This effort could be coordinated with the Faculty of Agriculture at Kabul University to build the long-term institutional capacity for agriculture sector training.
3. Establish production and marketing centers. Establishment of *food production and marketing centers* would provide a focal point for technical assistance ranging from production technologies, to enterprise management, to marketing. Coordinated with university education programs and extension activities, such centers could be developed into institutions that would facilitate improved production in the short term while providing technical support services (production technology, plant diagnostics, management and marketing) in the longer term. Such centers would

increase production and income, while helping producers build capacity for higher quality.

4. Create marketing organizations. The creation of marketing organizations will facilitate the education and training of farmers on quality issues, disseminate relevant market information, and allow for a collective approach to international markets. Local producer organizations could be developed to assist producers. Working with the Ministry of Agriculture and NGOS, institutions can be established to support the marketing system, such as sorting and grading procedures, storage, processing, credit, cross border customs facilities and so on.
5. Build infrastructure. The construction of cold storage facilities, packing and processing centers in major production and trade centers will improve the quality of Afghan products as well as strengthen its marketing capabilities. A new range of perishables previously unavailable to international markets as well as proper grading and presentation of products as a whole will significantly increase the competitiveness of Afghan horticultural products.

1976 Afghanistan Horticulture Benchmarking Study

Submitted to:

Dr. Patrick Brown
University of California-Davis
International Programs/Afghanistan Horticulture Marketing Project

This report is a summary of information compiled in 1976 by Agland Investment Services for an Horticulture Subsector Study of Afghanistan

Prepared by:



Agland Investment Services, Inc.

711 Grand Avenue, Suite 290 – Marina Bldg.

San Rafael, CA 94901

Telephone: 415-460-1352 - Fax: 415-460-5368

E-Mail: agland@aglandinvest.com Web page: <http://www.aglandinvest.com>

INTRODUCTION AND OVERVIEW

Introduction

Overview

Climate

Water Availability

Soils

Research facilities

Horticulture constraints

EXPORT MARKETS

Existing Export Markets

Fresh Fruits

Dried Fruit

Nuts

Constraints on Export Development

STORAGE AND PROCESSING

Dried Fruits

Fresh Fruits

Nuts

Other Processing

Storage

TRANSPORTATION

Domestic

Export

Surface Transport to distant markets

Air Freight

CONCLUSION

APPENDICES

INTRODUCTION AND OVERVIEW

Introduction

This is a summary of the 1976 *Afghanistan Horticulture Sub Sector Survey* report, prepared for The World Bank, analyzing horticulture production in Afghanistan at that time and providing recommendations for improvements. This summary was prepared so as to provide a historical benchmark for new efforts currently underway to revitalize Afghanistan's horticultural industry.

Overview

Horticulture in Afghanistan has traditionally been an important part of Afghan exports. In 1975 horticulture contributed 40% of total export earnings while utilizing only 6% of cultivated land and 12% of permanently irrigated land and was the single largest contributor to export earnings in the Afghanistan economy. Horticulture exports were limited to fresh fruits, dried fruits and nuts. Vegetables had not been exported for five years due to vegetable shortage within the country and a government embargo on vegetable exports.

Of the 232 thousand hectares cropped by fruit and vegetables, 60% was under fruit and nut orchards, half of which were vineyards. The bulk of grape production was of the Kishmishi group. Kishmishi grapes of Afghanistan are the same as Thompson seedless of California and Sultania of Australia, Greece, Turkey and Iran.

The most dominant vegetable crop was potatoes comprising 15% of the 90 thousand total hectares. Table 2 provides a list of the most common fruits and vegetables that were grown in Afghanistan. For more details on Afghan horticultural production see Appendix 2.

Table 1 Horticultural Crops Being Grown in Afghanistan

Vegetables		Fruits
<u>Cool Season</u>	<u>Warm Season</u>	
*Asparagus	*Beans	*Apples
*Brassica crop in general	Corn	*Apricots
Cress	*Cucumber	Cherries
Fennel	*Eggplant	Figs
*Garlic	*Melons	Peaches
*Leek	*Okra	Pears
*Lettuce	*Pepper	Plums
*Onion	Squash	Mulberries
Parsley	Sweet Potato	*Pomegranates
Pea	*Tomato	*Grapes
*Potato	*Water Melon	*Almonds
*Radish		*Pistachios
*Rhubarb		Walnuts
*Spinach		*Oranges
*Turnip		Lemons
		Grapefruit
<i>*main items</i>		

While there is no comprehensive data on farm size, distribution average farm size is estimated to be about 2.5 hectares. Afghanistan's rural population was estimated to be about 12.2 million people, giving an average density of about one settled rural dweller per 0.3 hectares.

Climate

The climate is a continental climate classified as temperate and is characterized by arid hot summers and cool winters. Most precipitation occurs from December to March. A wide range of horticultural crops can be grown in the region and ranges from cool temperate zones such as Bamyan (137 frost days per year) which is suitable for potatoes or other cool weather crops to a warmer climate such as Nangarhar, where citrus is grown. As can be seen in table 1-1, Afghanistan can produce some vegetables all year around although it does not appear to possess a seasonal advantage in producing early exotic vegetables. In fact the report states that Afghanistan imports early vegetables from Pakistan. Table 2 provides a sample of a typical crop rotation for different climatic areas in Afghanistan. For more detailed climate information see Appendix 1.

Table 2 Crop Rotations in Various Climatic Areas

Length of Growing Season	Frost Free days	Region	Crops/year	Typical Rotation	Crop Growing Period
Long	315	Jalalabad	2-3 crops	1 Wheat	Oct/May
				Rice	June/Oct
				2 Onion	Dec/May
				Eggplant	May/Aug
				Cauliflower	Aug/Feb
Medium long	270	Kandahar	2 crops	1 Wheat	Oct/June
				Corn	June/Oct
				2 Green Onion	Oct/Apr
				Eggplant	Mar/July
				Spinach	July/Dec
Medium	210	Kabul, Herat	1-1/2 crops	1 Wheat	Oct/July
				Carrot	July/Dec
				1 Radish +	
				Eggplant	Mar/July
				Spinach +	
				Turnip	July/Dec
Short	140	Bamyan	1 crop	1 Wheat	Oct/Aug
				2 Potatoes	May/Sept

Water Availability

The paper identified water as “the single scarcest resource and greatest constraint to expanding Afghan agriculture”. Water is not such a large constraint when dealing with horticulture because of the small amount of land being utilized for horticultural crops. About 10% of Afghanistan’s total land area was being cropped in 1976. Rainfall ranges from a low of 75mm in Farah to 1,168 mm in South Salang with February and April being the rainiest period.

In 1976 approximately 3.3 million ha of the land area was irrigable, but only 2.4 million ha of this area was cultivated each year and much of it did not receive adequate water. Water irrigation sources include:

- Canals 2.10 million ha
- Springs .19 million ha
- Karezes .17 million ha

- Wells .02 million ha

Groundwater is what feeds the Karez system and its further potential is unknown. Water percolates through the coarse talus deposits on the mountain slopes and many rivers are fed by ground water.

Soils

The soils in general are light textured, low in organic matter (less than 1%) and very high in calcium (8% up to 20%) with a pH of 8 to 8.5. The low organic matter and light texture creates a soil with poor structure that is subject to crusting which can be an issue for germinating seedlings. The high calcium and base soils result in poor micronutrient uptake.

Most of the soils are not highly fertile due to a lack of fertilizer use. Soils are deficient in all plant nutrients especially nitrogen. In 1975 enough nitrogen fertilizer was used to provide 9.6 kg/hectare of N. Wheat and corn use between 60 and 150 kg/ha. Although Soil fertility once recognized and treated will not be a limiting factor. Physical characteristics will be harder to manage.

Research facilities

The Ministry of Agriculture had research farms in a number of provinces. The main research stations are located in the following provinces:

Kabul: Six farms covering all aspects of agricultural and horticultural work.

Khandahar: The research station at Kocharan (45 ha) does work on wheat, fruit and vegetable crops.

Kapisa (Parwan): The Kohpica station works on vegetables and wheat for seed increase.

Kunduz: (55 ha), Cotton, wheat, and horticultural crops.

Bamyan: (6 ha), Potatoes, cereals and vegetables.

Herat: (220 ha), Cereals, vegetables and vineyards.

Horticulture constraints

Some of the main reasons for low utilization of land for horticultural crops even when horticultural crops have superior returns are:

- Low yield.
- Slow productivity growth due primarily to low soil fertility caused by poor quality inputs such as:
 - Quality vegetable seed
 - Pest controls
 - Use of micro nutrients

- Management
- Lack of market access (most important for fresh produce)
- Unequal distribution of water rights
- Access to institutional credit: many of the land operators do not have the necessary collateral to take out a loan from the Development Bank of Afghanistan. This means they are limited to private money lenders who charge up to 30% interest on loans.

EXPORT MARKETS

Afghan fruit and nut export were an important segment of its trade sector. Fresh and dried fruit and nuts accounted for 78% of the value of Afghan agricultural exports and 41% of the value of all exports. Dried fruit represents 18% of total exports compared to 12% for fresh fruit and 11% for nuts.

The principal fruit and nut exports were raisins, averaging 31% of the value of agricultural export and 90% of the value of dry fruit exports, grapes averaging 13% of the value of agricultural exports and 60% of fresh fruit exports and almonds which average 10% of the value of agricultural export and 50% of the value of nut exports.

Since 1972 Afghanistan has annually exported an average of 150,000 tons of fruits and nuts valued at \$70 million dollars. Vegetables were not part of exports due to an embargo placed on vegetable exports five years ago because of domestic shortages. From Table 3 it can be seen that between 1972 and 1975 total export volume increased yearly while value increased until 1974 but fell between 1974 and 1975. This decrease in value is attributed to serious quality problems impeding further export expansion.

Table 3 AFGHANISTAN - FRUIT, NUTS, AGRICULTURAL AND TOTAL EXPORTS 1972/73-1975-76

	<u>1972/73</u>	<u>1973/74</u>	<u>1974/75</u>	<u>1975/76</u>
A. <u>Volume of Exports (metric ton)</u>				
Fresh fruit	73,753	98,531	121,470	128,308
Dried fruit	39,784	42,263	46,698	45,014
Nuts	13,424	12,514	13,979	11,225
Total	<u>126,971</u>	<u>153,308</u>	<u>182,147</u>	<u>184,447</u>
B. <u>Value of Exports (\$ million)</u>				
Fresh fruit	10.7	21.9	31.5	25.6
Dried fruit	18.1	32.8	39.6	31.7
Nuts	14.7	14.3	24.6	14.2
Total	<u>43.5</u>	<u>69.0</u>	<u>95.7</u>	<u>71.5</u>
C. Total Agric. Exp. (\$ value)	56.3	82.3	129.9	N.A.
D. Total Exports (\$ value)	125.6	159.1	210.7	N.A.

Source: Published Trade Statistics; 1975/76 figures unpublished.

Existing Export Markets

Afghan exports consisted of fresh fruits, dry fruits, and nuts and were directed toward four major regions:

- India and Pakistan 70%
- USSR, China, and Czechoslovakia (barter-zone) 20%
- EC (Principally UK and Germany) 4%
- Middle East (Iran, Lebanon, Saudi Arabia, Kuwait, Iraq) 3%

Fresh Fruits

The value of fresh fruits had been steadily increasing over the last four years. Much of this increase came from a dramatic increase in exports of pomegranates (grown in Kapisa, Kandahar, and Nagarhar) and melons. Grapes also increased in 1974. Pakistan accounts for 54% of the value of Afghan fresh fruit exports and India accounts for 20% of fresh fruit exports (grapes, pomegranates and melons). Russia's fresh fruit imports are mostly pomegranates and some citrus.

Dried Fruit

Dried fruit exports mainly consist of raisins. The major importers of dried fruit are USSR, India, U.K., Pakistan and China in that order. The value of dried fruit exports fell sharply from 1974 to 1975 and is attributed to serious quality issues.

Nuts

Almonds and pistachios comprise 54% and 25% of Afghan nut exports respectively. The principal markets for almonds were Pakistan, India and USSR, each accounting for 1/3 of almond exports. Pistachios go primarily to Lebanon and India which account for 58% and 26% of pistachio exports. Walnuts go primarily to the USSR which imports 70% of Afghan walnut exports.

Constraints on Export Development

The 1976 World Bank report identifies several constraints to further export market development for fresh fruits, dried fruits, nuts and vegetables.

Fresh Fruits: Distant markets are unlikely to be tapped by Afghan fresh fruits because of a lack of significant seasonality advantages and the high cost of transport. Although the potential demand in neighboring countries may exceed Afghanistan's ability to meet this demand at the present rate of growth.

Dried Fruits: Consumption of dried fruits is declining in most industrialized countries, exceptions were USSR and Japan. Also Afghanistan has many competitors all more advanced in marketing. Some of the competitors include USA, Greece, Turkey, Iran and Australia.

Tree Nuts: Non-commercial production methods (not many organized orchards). Strong competition from exporting nations in every category of tree nut produced by Afghanistan.

Fresh Vegetables: Need for variety improvements and seed availability and coordinating export market demand with the establishment of a marketing season. Some potential initial vegetable exports identified were potatoes, onions and dried pulses. Other areas of expansion identified were: fresh peas, beans, cabbage, cauliflower, brussel sprouts and asparagus. These recommendations were made looking mainly at the Iranian market.

STORAGE AND PROCESSING

Afghan horticulture processing, while limited in scope, supported a \$100 million annual export business. Processing consisted of extensive drying of fruits (mainly raisins) some hand shelling of nuts, very limited produce grading, and a few small canned and bottled product operation but there were no cold storage facilities or packing houses. Some of the consequences of having limited storage and processing were high wastage, lower prices and growth constraints.

There were no cold storage facilities available in Afghanistan.

Dried Fruits

Raisins: There were 12 raisin cleaning and grading plants for red raisins (sun dried) capable of cleaning and processing 40,000 to 50,000 tons. There were no raisin processing facilities in Herat. Green raisins were shade dried near vineyards in mud-brick structures and sold with no further processing to primarily Indian markets.

The 1975 mission made the following needs observations of raisin processing:

- Dry raisins on straw mats rather than on ground
- Store raisins in bins to avoid crushing (At that time raisins were stored in burlap sacks that were stacked quite high resulting in sticky crushed raisins on the bottom)
- Improve in-plant sanitation in processing plants
- Improve finished product storage facilities
- Ensure fumigation of export package
- Pay greater attention to production and marketing of grades and sizes demanded by the market

Dried Apricots: Apricots were air dried on the tree or as halves. The resulting product is dark brown to gray in color and extremely tough and would not be accepted in European or US markets. There was some work being done on sulphur treated dried apricots which was reported to be of excellent quality. The dry out yield in Afghanistan was reported to be 5 to 6 fresh tons per 1 ton of dried product whereas in California it was 7 to 8 fresh tons.

Fresh Fruits

Fresh fruit exports consisted mainly of grapes, melons and pomegranates; other products included apples and apricots. Total shipments in 1975 was about 125,000 tons. Modern handling facilities were minimal resulting in losses due to spoilage, mishandling and lack of grading. Harvesting, shipping and packing procedures all needed to be improved. Organization of production and export marketing on a national level was also a deficiency.

Grapes: Wooden boxes were generally used. The grapes were stacked inside higher than one layer resulting in damaged fruit and reduced shelf life.

Melons: Afghan melons were shipped to India and Pakistan. Some the areas that needed improvement were:

- Grading to reduce the wide variations in weight
- Reduce bruising by packaging product in corrugated boxes with separation stripes as apposed to loosely packed wooden boxes
- Improve handling methods and use of fungicides to reduce rotten fruit

Nuts

Most nut exports from Afghanistan are in-shell and nut processing was essentially a cottage industry. In Kabul there was one firm, Spiaf, that had a modern facility organized to process and package nut for export. The facility had a processing capacity of 3 tons per

day and required a work force of 50 men and 30 women. Products included Blanched Almonds, Shelled Almonds, Shelled Walnuts, Apricot Kernels and Shelled Pistachios.

Other Processing

Canning: One canning plant was built in Kandahar in 1963. The plant was to utilize locally produced fruits. The plant was not successful and was purchased by the government in 1973. It reopened in 1974 selling 95% of its output to the Ministry of Defense. The plant was designed to process 40 tons per day but was operating at a maximum production of 10 tons a day.

Winery: There was one winery in Afghanistan, Castellino Wine Company of Kabul. The principal products were table wines, distilled spirits and champagne. Output was about 3,000 hectoliters annually.

Olive Packing: Olives from Nangarhar were cured, graded, bottled and pasteurized. Production was 650 tons per year and the market was USSR.

Storage

Dry storage and warehouses were not generally available in Afghanistan. The Kandahar canning factory had the largest dry storage area for processed fruits and vegetables estimated to be about 3,000 square meters. Raisins and other dried fruits were stored at the farm in leveling burlap bags stacked 5 to 7 high until sold. The conditions were usually inadequate with substantial insect, moisture and crushing damage.

Perishable products such as seeded grapes, pomegranates, potatoes and onions were stored in cellars to increase storage life. Products in the cellars stay at about 40-50 degrees Fahrenheit through the fall and early winter.

Cold Storage: There was no operational cold storage in 1975 except for a small unit to supply the USAID Commissary and a small unit for the armed forces. At some point in time, any country with substantial horticulture trade must invest in a cold chain. A cold chain would provide means to:

- Hold and accumulate packaged fruit
- Purchase fruits and vegetables at the peak production season and store until prices increase
- Link and supply cold storage to facilities to surrounding countries

TRANSPORTATION

Domestic

In 1975 most rural roads were unpaved and often impassible from November to March but a good system of paved main roads connected all major urban areas. No railroad facilities existed. International airports were located at Kabul and Kandahar, with Kandahar used mainly as an alternative airport for passenger flights and for military purposes.

Domestic transportation of small lots of produce was done from farm to bazaar by camels or donkeys. This system of transportation is hard on perishable products. The roads did not lend themselves to the use of trucks although agricultural tractors were becoming increasingly more common place and could be used to transfer produce.

Export

The main routes used to export horticulture crops to neighboring countries were as follows:

Pakistan and India

- a) Peshawar reached from Kabul by the Khyber Pass, was a major destination of Afghan trucks. Peshawar was a transshipment point for onward journeys, a storage and grading center with a number of small cold stores, as well as being a railhead for overseas bound freight via the port of Karachi. Afghan shipments to Indian centers such as Amritsar and New Delhi are routed through Peshawar.
- b) Quetta was a railhead accessible to Kandahar, via the border town of Spin Boldak.

USSR

The three railheads on the Russian border were a) Kushka, north of Herat, b) Termez, north of Mazar, and c) Sherkhan Bandar, north of Kunduz.

Iran

Marshad, via the border town of Islam Qala, was the authorized destination of Afghan trucks in Iran, whence freight was transshipped by rail or Iranian trucks.

Surface Transport to distant markets

Europe and the UK: From Kabul to the Russian border by truck to load at the railhead of Termez and thence to Leningrad by rail; transfer to ship for London. Quoted transit time was 8 weeks but there were reports of delays stretching three or four months.

Overseas destinations by ship: Kabul to Peshawar by truck, on to Karachi by rail and then by sea to New York or Tokyo and the Far East. Transit time was approximately 10 weeks. An alternative method of shipping to Japan was through the Trans-Siberian Railroad, quoted time being six weeks.

Competing dried fruits from Greece and Turkey had lower freight costs and very short delivery times giving Afghanistan a disadvantage in competing for markets outside its neighboring countries.

Air Freight

Four airlines were authorized to land in Kabul, Ariana (49% Pan American), Aeroflot, PIA and Iran Air. Trans Mediterranean Airlines (TMA) an all cargo airline very active in the fresh fruit and vegetable transportation trade to the Persian Gulf states was seeking approval to operate scheduled flights from Kabul.

CONCLUSION

Research recommendations

Similar climates should be identified in other parts of the world such as Arizona, Southern California and Israel where extensive varietal and other agricultural research has been completed. This research could then be used to identify the best crops and varieties for further research work in Afghanistan.

Investment needs

The report identified the following, as immediate investment needs:

- Improve unit value of fruit export by improving quality.
- Increase production incentives and improve income distribution.
- Establish Fruit and Nut Trade Regulatory Commission, capable of quality regulation.
- Establish a Fruit Marketing Corporation most likely as a joint venture with an outside private firm.
- Establish concentrated juice processing (cull utilization) and fruit tree nursery root stock production (quality improvements)

APPENDICIES

Appendix 1

Climatic Data for Selected Towns in Afghanistan

Station	Elevation	Average Annual Precipitation	Years of Record	Mean Data of First and Last Killing Frost	Mean Number of Frost-free Days
Faizabad	1200	548	8	Nov 4 - March 24	224
Kunduz	455	371	13	Nov 27 - March 13	258
Baghlan	510	271	13	Nov 27 - March 12	249
Mazar-I-Sharif	378	197	13	Nov 16 - Mar 7	253
Maimana	815	376	12	Nov 11 - Mar 19	236
Heart	964	207	13	Nov 3 - Mar 19	228
Farah	660	75	11	Nov 20 - Feb 22	270
Kandahar	1005	180	8	Nov 20 - Feb 21	271
Laskargah	780	106	11	Nov 16 - Feb 19	269
Jalalabad	566	172	13	Dec 4 - Jan 22	315
Ghazni	2183	296	13	Oct 12 - Apr 6	188
Khost	1146	492	9	Nov 25 - Feb 13	284
Kabul	1803	346	13	Oct 26 - Mar 29	210
Jabul Seraj	1630	510	10	Dec 6 - Feb 24	284
Salang North	3366	1169	11	-	-
Salang South	3172	1168	9	Oct 4 - May 19	137

Source: Afghanistan Central Statistical Office, November 1974.

Appendix 2

Area of Agricultural and Horticultural Crop Production (000's ha)

Province	Total Irrigated Area	Total Area of Horticultural Crops	Area of Fruit and Nuts	Area of Grapes	Area of Vegetables	Area of Potatoes	Horticultural Crops as % of Total Irrigated Area
Urozgan	138	3.6	3	0.2	0.6	0	2.6
Badghais	104	5.6	4.2	1.5	1.4	0	5.4
Bamyan	30	4.3	1	0	3.3	3	14
Badakhashan	136	7.1	4	0.5	3.1	1	5.2
Baghlan	177	10.5	5.3	1	5.2	1	5.9
Balkh	291	10.7	6.7	3	4	0	3.8
Parwan							
(with Kapiss)	102	22.5	15.1	12.4	7.4	1.2	22.9
Paktia	87	6.3	3.6	1.5	2.7	0	7.2
Takhar	232	10.5	6.3	2	4.2	0	4.5
Jawzajan	251	9.6	6.5	3	3.1	0	3.8
Zabul	73	3.3	2.6	2	0.7	0	4.5
Samanghan	134	6.7	4.7	2	2	0	5
Ghazhi	158	10.8	6.5	4	4.3	2.3	6.8
Ghor	125	3	1.6	--	1.4	0	2.4
Faryab	236	8.5	5.3	3	3.2	0	3.6
Farah	138	3.6	2	1	1.6	0	2.6
Kabul	70	10.6	3.4	2	7.2	0	15.1
Kunduz	286	10.3	6.3	1.3	4	0	3.6
Kandahar	165	24.2	18.6	15	5.6	0	14.7
Nangarhar							
(with Kunar)	135	16.1	9.9	2.9	6.2	1	11.9
Laghman	46	6.4	2.6	1.5	3.8	1	13.9
Lohgar	41	5.6	2	1	3.6	1.5	13.6
Nimroz	174	2.3	1.8	0.5	0.5	0	1.3
Nardak	32	4	1	0	3	2	12.5
Heart	363	12.2	11	7	5.2	0	3.4
Helmand	160	9.3	5.3	2	4	0	5.8
Grand Total	3884	231.6	140.3	70.3	91.3	14	6

APPENDIX B

Prioritizing Export Opportunities for Horticulture in Afghanistan

Submitted to:

**International Programs
College of Agricultural and Environmental Sciences
University of California, Davis**

Prepared by

**Refah Maani
Business Consultant
September 2003**

Contents

- I. Executive Summary
- II. Background and Methodology
- III. Selected Horticultural Products
- IV. Selected Export Centers
- V. The Supply Chain
- VI. The Value Chain
- VII. Export Markets: Dubai, UAE
- VIII. Constraints and Limitations
- IX. Major Conclusions
- X. Recommendations and Next Steps
- XI. Appendices
 - A. Supply & Value Chains
 - 1. Pistachios
 - 2. Raisins
 - 3. Cumin
 - 4. Almonds
 - 5. Grapes
 - 6. Pomegranate
 - 7. Pine nuts
 - 8. Peanuts
 - 9. Walnuts
 - 10. Melons
 - B. Illegal Poppy Cultivation
 - C. Successful Export Case: CADG
 - D. Export Statistics
 - E. Import Statistics (Dubai, UAE)
 - F. References

I. Executive Summary

Afghanistan is only recently emerging from over two decades of war and five years of drought, resulting in a devastated economy and vast deterioration of its infrastructure, industrial plants, irrigation systems, orchards and agricultural production lands. It is in this context that a pragmatic approach to identifying opportunities for the exportation of horticultural products is presented.

A short list of products with high perceived potential is initially selected (see Table 1). Available and relevant statistics are gathered and analyzed. In-depth interviews are performed with key industry players across three significant export centers (Kabul, Kandahar and Jalalabad) and one overseas import-export hub (Dubai, UAE). As a result, a good understanding of the supply and value chains is achieved, and major constraints and limitations are identified.

Table 1: Product List
<ul style="list-style-type: none">• Almonds• Cumin• Figs• Grapes• Melon• Peanuts• Pine Nuts• Pistachios• Pomegranates• Raisins• Walnuts

The major conclusions are presented with a Product-focus as well as with a Process-focus. Product-oriented conclusions stem from an analysis of each product's "*Income Potential*" as well as the "*Operational Feasibility*" for its exportation. Mapping these two concepts on a chart allows us to conceptually group the horticultural products into 4 categories (see Figure 1):

- I. *Short Term Opportunities* – these products are “low hanging fruit” that present favorable income potential that with little operational investment can result in significant short term value capture.
- II. *Long Term Opportunities* – these products present a favorable income potential, but require significant investment on the operational and production side to fully capture value.
- III. *No Foreseeable Opportunity* – these products have low income potential and require significant operational investments. Therefore, they do not currently present opportunities for the export market.

- IV. *Case by Case* – these products require little operational investment in the short term; however, their income potential is uncertain. They should be evaluated in more detail on a case by case approach.

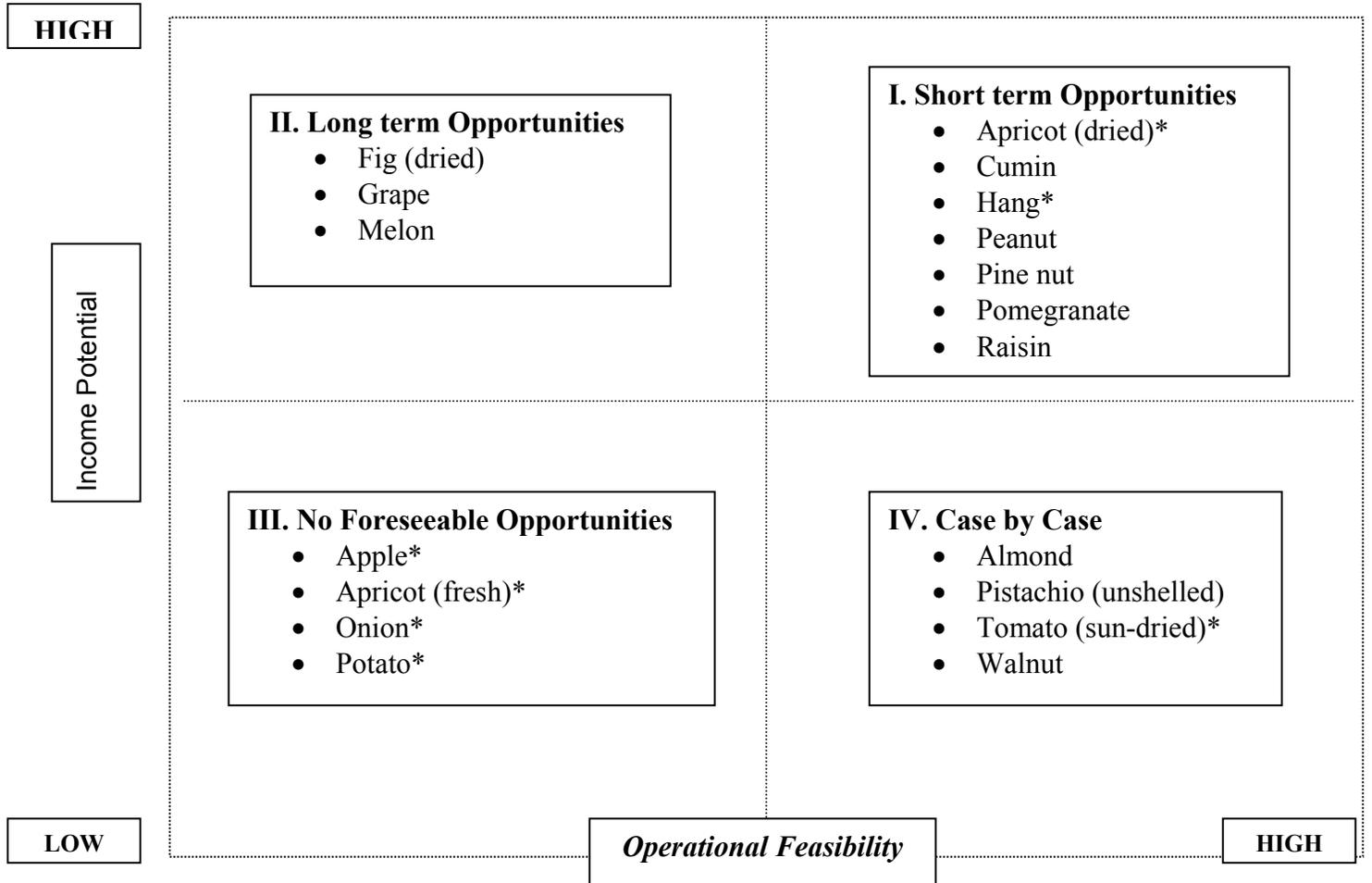
Process-oriented conclusions are summarized within the following three frameworks:

1. The Supply Chain – a lack of processing, packing and adequate post-harvest handling is confirmed.
2. The Value Chain - limited market information, poor marketing channel management and the absence of commercial transaction tools are noted.
3. External Factors – various limitations in institutional support, communication systems and transportation are present.

Recommendations are presented, based on the resulting prioritization of the products studied (Figure 1) as well as the need to overcome significant constraints and limitations across the industry as a whole (process-oriented conclusions). However, it is suggested that before any course of action is taken, an implementation focus first be defined.

A *Product Focus* would lead us to select horticultural product(s) and implement crop-specific projects. This would be ideal if the initial objective is to demonstrate a successful export case. A *Process Focus* would guide us to select specific constraint(s) to remedy, and implement process-specific projects. This would achieve the goal of creating a positive, industry-wide impact. Finally, a *Hybrid Focus* would consist of selecting a horticultural product as well as a major constraint to remedy. Implementing a hybrid project would require greater resources and allow the presentation of a successful case as well as sharing benefits across multiple product segments.

Export Opportunities (Figure 1)



** these products evaluated based on limited information*

II. Background and Methodology

Background

Afghanistan is only recently emerging from over two decades of war, which resulted in devastating the economy.

The country's infrastructure, industrial plants and irrigation systems have been largely destroyed. Roads have deteriorated significantly. Communication and education had almost come to a stand-still. Orchards and agricultural production lands have suffered. Public institutions, government regulation and industry support, research and development all but vanished during this period.

As a result, consumption and purchasing power declined dramatically, especially demand for upscale and internationally competitive products.

Needless to say, the international competitiveness of many of Afghanistan's horticultural products deteriorated.

Moreover, a drought since 1999 has complicated production yields and quality across most of the country. 2003 is first year coming out of this drought, but its effects still linger.

Recent NGO activity has restored and improved much of the situation, but work is still needed before Afghanistan can function properly as a developing nation.

Methodology

Given the peculiarity of Afghanistan's deteriorated situation, a five-step approach of data gathering and analysis is taken in this market study:

1. ***Create Initial Short List.*** Based on previous studies, historic data, and initial interviews with exporters and industry experts, a hypothesis is made. A short list of products is segregated into Primary and Secondary categories, based on their perceived export potential.
2. ***Map Supply and Value Chains.*** For each *primary* product, a representative supply and value chain is mapped. The supply chain reveals the typical steps and activities the product undergoes from harvest to export. The value chain identifies the monetary value of the chosen product at different stages of the process.
3. ***Evaluate Relevant Statistics and Trends.*** Available statistics from state agencies and institutions are gathered and reviewed. Relevant events and trends are evaluated. International opinion from potential importers is taken into account.
4. ***Rank Income Potential and Operational Feasibility.*** Each product is evaluated on its *Income Potential* (international competitiveness, opportunities for value capture, potential scalability) as well as the *Operational Feasibility* (production practices, product quality, logistics) of its exportation.
5. ***Prioritize Export Opportunities.*** The resulting rankings are charted on a map that in turn prioritizes the products into four major categories:
 - (i) Short Term Opportunities

- (ii) Long Term Opportunities
- (iii) No Foreseeable Opportunity
- (iv) To be evaluated “Case by Case”

Quantitative and Qualitative Research

Where possible, quantitative analysis is employed. Statistics from government agencies and chambers of commerce are gathered and analyzed. However, given the current situation in Afghanistan, relevant documented data is scarce and often inaccurate or incomplete.

Therefore, a qualitative approach is taken. Detailed field interviews are performed in Kabul, Kandahar and Jalalabad with representative industry players (traders, merchants, exporters) of the supply and value chains. Additionally, relevant institutions are consulted and interviewed (Ministries, Chambers of Commerce, Universities and private enterprises). The resulting conclusions are presented with two paradigms: Product Orientation and Process Orientation. The former evaluates the operational feasibility as well as the income potential on a product by product basis. The latter focuses on general supply and value chain observations that apply across all products.

III. Selected Horticultural Products

Afghanistan produces a wide variety of horticultural products, many of which have historically been significant export items. For the purpose of this market study, previous research, historic data, and initial interviews with exporters and industry experts were taken into account, and a short list of products are defined. This list is segregated into Primary and Secondary categories. *Primary* products are those with a greater perceived export potential. This study focuses on this first category.

Primary Products	Secondary Products
<ul style="list-style-type: none">• Almonds• Cumin• Figs• Grapes• Melon• Peanuts• Pine Nuts• Pistachios• Pomegranates• Raisins• Walnuts	<ul style="list-style-type: none">• Apples• Apricots• Cherries• Citrus• Hang• Mulberry• Olive• Onions• Peaches• Potatoes• Tomatoes

PRIMARY PRODUCTS

ALMONDS

Quality is inconsistent (ex. always find rancidity in any handful). High quality attributes (taste) may allow it to find niche, but better grading and processing is required. Logistics pose no significant barriers. In Jalalabad, no significant value-added processes exist.

Costs are relatively high and not competitive. Much depends on manual labor for keeping shelling costs low. California almonds are driving even Iranian almonds out of market due to their good appearance and low cost. California almonds were selling at lower cost than Afghan almonds at certain retail stores in Kabul. Dubai re-exported about 100 Tons last year at low cost. Poor packaging, cleaning and grading limit amount of value Afghan traders can capture.

CUMIN

Cumin seeds can be divided into 2 major varieties, Black (better quality, lower production) and White (actually green, medium quality, higher production). The black variety goes to India while the white is shipped to Pakistan. Logistics pose no significant barriers, although poor transport conditions through Pakistan (obligated to transport by train) result in delays and pilferage.

Currently traders add little to no value; they perform some cleaning and just repack in bulk. Indian commission agents try to corner the market and manipulate prices (same happened in Dubai, where prices suddenly rose 133%). There is poor market information for traders and growers alike. Marketing channels are limited, lowering the negotiation power of the Afghan traders. Both India and Pakistan are capturing most of the value by limiting Afghan possibilities to market directly.

FIGS (DRIED)

Good quality exists and with relatively low investments, greater quality can be achieved. Processing techniques need to change and storage & handling need to improve to prevent bleaching. There is a lack of basic processing and grading that could easily be put into place.

Currently Afghan dried figs would not compete very well internationally. However, with better handling, good packaging and presentation, there lies an opportunity for export growth.

GRAPES

Due to the lack of cold-chain and proper transport, immediate opportunities are limited. Costs are also relatively high and quality has declined (especially due to the drought). Production practices are still primitive and yields are low.

However, price comparisons with Dubai market shows possible opportunity in the early harvest stages of Thompson seedless. Afghanistan could possibly supply early seedless grapes (late June, early July) when international supplies are very limited and prices are high. Currently, grapes and make it from harvest to auction in Pakistan in a surprising 18 hours. Of course, the lack of cold chain creates damage and significant reduction in shelf-life. But, for example, a refrigerated container at harvest site, better packing and quality control could take advantage of a lucrative window in the international market.

MELONS

Melons exhibit good inherent quality, especially those from the northern provinces. Little resorting is done. No packing exists; traders just loading the product onto the back of the

truck. Sorting is done at the auction site by creating differentiating piles. Indian middlemen are often present and buy in Afghanistan. More information would need to be gathered in order to better evaluate its real potential. Initial findings point to opportunities in long term.

PEANUTS

Peanut quality appears to be good, although toxin levels are not controlled. Logistics pose no significant barriers. Production is rapidly increasing in Jalalabad (Nangarhar Province) and demand seems to be growing. An unofficial estimate of annual exports rounds 400 to 500 MTons. Nevertheless, it is considered the highest export item for Jalalabad. Again, Pakistani traders add greatest value by roasting, processing and repacking for domestic consumption and re-export.

PINE NUTS

Pine nuts suffer the typical low/no-value added phenomena. Villagers and/or families harvest the nuts from natural, wild forests and roast them at home. They then take the product to market where the trader repacks into 70-75kg jute bags (bulk) to be re-exported to Pakistan. Pakistani importers, re-roast, sort, clean, pack and re-export (probably under Pakistani origin) to Gulf States, and also apparently to Turkey and China.

PISTACHIOS

Pistachio quality in Afghanistan is high. They are harvested from natural, wild orchards. Its destination is as an ingredient for confectionary market. Logistics pose no significant barriers.

Its cost, however, is relatively high and not competitive internationally (ex. in Dubai versus Iranian pistachios). They do seem to be the top item imported from Afghanistan into Dubai (approximately 400 Tons last yr at declared value of \$1million). None was re-exported. Most dealers still prefer Iranian pistachios due to their greater consistency and lower cost.

POMEGRANATE

Pomegranates in Afghanistan are known for their good quality. Logistics pose no significant barriers and the storage available causes limited damage.

Its international competitiveness is doubtful. For example, it could not compete in Dubai, due to Iranian reputation and its relatively lower costs. With improved marketing, one could position Afghan Pomegranates as higher quality and demand a higher price. But initially, it would need to present the same/lower prices to break into the market. The redder varieties in particular could do well in the Far East markets.

RAISINS

Afghan raisins traditionally have very good quality. But high costs hamper its competitiveness. There are two or three specialty varieties that present high margins and good possibilities (Abjoosh, Shundukhani, Kalaudarakh) – but they have lower production volumes. The green (long) raisin has an excellent taste, but then again, costs are relatively high compared to their substitutes in Dubai (would need to check far eastern markets). The low end, sun-dried ghazni variety could compete with proper processing investments. In fact, CADG rehabilitated a plant in Helmand and is currently exporting 80-100 Tons per month to UK, Germany, Czechoslovakia, Taiwan (see Appendix C). It's unmet demand is currently at around 200 Tons per month.

WALNUTS

Most walnut exports go through Jalalabad with minimum to no value added. They end-up getting unshelled mostly in Pakistan, although some is done in Kabul. Most traders usually just add a small margin for minimal cleaning and repacking (bulk). Product originates in privately owned orchards, so improved cultural practices could be introduced. Prices at target destination markets (India, Far east) need to be checked in order to justify investment in processing plants.

SELECTED SECONDARY PRODUCTS

APRICOTS

Fresh

Fresh apricots generally exhibit poor appearance. Poor handling and transport are the main causes. Currently, they are not competitive internationally. More information would be needed to make a more accurate assessment.

Dried

Dried apricots can achieve good quality. However, processing would need to be introduced to compete internationally. Need basic processing, grading. Also, would need to implement proper grading, packaging and presentation. More information is needed, especially on costs.

ORANGES

Citrus has traditionally exported through Jalalabad. Most orchards are now dead, unproductive, or dried-out. This is mostly due to war and drought. Heavy investments would be needed to re-establish orchards and to repair/reconstruct the irrigation canals originally put in place by the Soviets. More information is needed to make a better assessment.

OLIVES

Afghan olives have a traditionally high quality reputation, especially in the Jalalabad area. Of the 4 original state-owned orchards (totaling almost 5,000 hectares), two (totaling 4,000 hectares) are still intact, and although relatively abandoned, could be rehabilitated. These two groves are currently rented out to the private sector for wheat and melon production. A Soviet processing plant (for pickling and oil extraction) remains abandoned in Jalalabad. Investment in a processing plant would be needed (the old soviet machines most likely cannot be salvaged). More information is needed to make a better assessment.

ONIONS, POTATOES, TOMATOES

These vegetable products were traditionally exported out of Jalalabad and also through Kandahar. They currently undergo a typical problem of seasonality. Afghan incapacity to properly store forces a sell-off during high season. Often, Pakistani traders buy, store, then re-sell to Afghanistan at 3x during off-season. Afghanis needless to say are unable to capture value. In any case, even during high season, Afghan traders cannot export due to higher relative costs and self-sufficiency in Pakistan. Quality is dubious for international competition. More information is needed to make a better assessment.

IV. Selected Export Centers

Historically, higher quality horticultural products were exported to India, the Gulf States, Europe and USA; and medium quality fresh and dry products would be shipped to Pakistan. Currently, high quality fresh products end up in Pakistan, high quality dry products in India, medium quality fresh products in the domestic market, and medium quality dry products in Pakistan, Bangladesh and the domestic market. Data from official governmental sources are scarce and inaccurate. However, given the statistics and information gathered, the top five export centers of Afghanistan can be ranked in the following way.

Rank	Historical	Current
1.	Kandahar	Kandahar
2.	Mazare-e-Sharif / Kondoz	Kabul
3.	Jalalabad	Herat
4.	Herat	Jalalabad
5.	Kabul	Mazare-e-Sharif / Kondoz

In short, Kandahar maintains its leadership as an export center. However, compared historically both Kabul and Herat have increased their importance in export activities.

Kandahar

Drought has damaged 30-35% of orchard acreage of Kandahar. Many growers cannot afford to irrigate so many end up harvesting their grapes immature. Thus, almost all raisins last year needed sulfur treatment for coloring. Needless to say, taste, Afghanistan's great competitive edge, suffered and its reputation tarnished.

Current estimates of surplus production are 20% for vegetables and 50% for fruit, down considerably compared to historic amounts. This is due to both lower yields as well as lower domestic purchasing power.

Historically Kandahar has been the most important export center, routing production from the provinces of Helmand, Oruzgan, Ghazni, Paktia, Paktika, Zabol. The traditional export route has been from Kandahar to the Pakistani border town of Chaman; then onto India via Lahore or onto other international destinations via Karachi.

Kabul

Historically, Kabul was mostly used for air freight shipments to Europe, the Gulf States and India. Currently, most of the production from the northern and central provinces are commercialized by traders in Kabul, and routed onto Pakistan. The most common export route is from Kabul, through Jalalabad onto the Pakistani border town of Peshawar. From there, goods are shipped on to Islamabad and/or India.

Many traders have direct relationships with Peshawar agents; they also have their own contractors there.

Herat

Herat is gaining importance as an export center and it can be explained by three major reasons. First, it is probably the largest city that has been least affected by the years of civil war and especially by the Talibans. As a result, it's infrastructure is relatively sound and in place.

Second, as Pakistani obstacles to international trade continue, traders are exporting through this route (see Appendix C), which takes goods through Iran to its Gulf port of Bandar Abbas, or on to Turkey and Eastern Europe.

Third, Iran's consumption has increased over the years and so has its demand for Afghan goods. However, most Afghan goods still are not price competitive with Iranian goods.

Jalalabad

Traditionally an important production and export center of horticultural products, Jalalabad has suffered and become less significant. Local vegetable production continues but is absolutely uncompetitive with Pakistani products. Lack of adequate storage forces Afghans to buy back their own production in the off-season, at 3 times the price, from Pakistani traders with facilities across the border. During the growing season, Pakistani products are often less expensive and of better quality (ex. okra, tomato, green beans, onion, potato).

The Chamber of Commerce estimates that unshelled peanuts, walnuts and pine nuts are the top exports of local production, all to Pakistan. Onions and tomatoes are exported only when there are shortages in Pakistan. As far as regional production is concerned, grapes, melons, pomegranate and apples from the northern provinces are the top fresh fruit exported out of Jalalabad "in transit". Raisins, almonds and pistachio (both unshelled) top the dry category. All in all, exports of regional products continue to outweigh exports of local (Nangarhar) production.

As far as export activities are concerned, Jalalabad, in short has become mostly a low value-added middleman of regional production.

Mazare-e-Sharif / Konduz

These two centers traditionally consolidated the production of the northern regions for export. They grew in importance during the Soviet occupation. Mazar was key in supplying the USSR through Uzbekistan, and on to Eastern Europe. Konduz would supply Tajikistan and other regions of USSR. Although those trading routes still exist and are utilized, the trend over the past few years for this region's production is to go through Kabul for export to Pakistan and India.

V. The Supply Chain

The export supply chains for Afghan horticultural products generally follow a similar pattern for fresh fruit on one hand and for dried fruit and nuts on the other. Detailed supply chains by product are shown in Appendix A.

Dried Fruit & Nuts

The typical supply chain for dried fruit & nuts involves the following major players:

Grower: typically harvests and takes to market on need-only basis; he has the ability to store locally.

Collectors: purchases in small amounts from small growers.

Traders: Afghan locals that consolidate purchases from collectors ship to importer/client.

Commission Agents: purchases on behalf of international importer, usually from the collectors. They compete with the local traders.

Importers: places original order and takes possession of goods at the border.

Packaging

From harvest to market jute or plastic bags (with no standard size/weight) are utilized. For export, mostly jute bags are used. In some cases, small plastic bags inside wooden crates are utilized. Some cardboard boxes are used for raisins. Commission agents often supply their own packing materials.

Fresh Fruit

The typical supply chain for fresh fruits involves the following major players:

Grower: privately owner of orchard/vineyard. Accepts one season harvest contracts.

Pre-harvest Contractor: Afghan trader that seals a purchase agreement before harvest, usually post-maturity. He then harvests and transport to the border.

Pakistani Importer/Financier: client of Afghan trader that clears the products, sends them to auction, and often finances the contracts.

Packaging

From harvest to market wooden baskets (typically 3 sizes, but without uniform size/weight), made of flexible pomegranate tree branches (1st or 2nd year shoots) are used. For export: mostly wooden crates.

Additional Comments

Storage

Lack of adequate storage facilities hinders the traders' ability to extend commercial window and results in losses (due to perishability, damage and pilferage) as well as

greater price fluctuations. Product is often left in the open, exposed to heat (42-44°C), dust, or rain.

Transport

Roads have improved, but still need more work. Transport by truck from Kanadahar to Chaman now only takes 3 hours (compared to 6 a few years ago).

VI. The Value Chain

We can understand the value chain by evaluating four major factors: i) the number of players/steps in the chain; ii) the value added of each player/step; iii) financing and payments. Detailed value chains by product are shown in Appendix A.

Number of Players/Steps

The number of players involved in the value chain varies; however, the major and most common players can be identified as:

- The grower
- The collector (small consolidating traders) and/or the commission agent (representatives of foreign importers)
- The local wholesaler/exporter
- The foreign importer/wholesaler
- The foreign retailer

Value-added of Players/Steps

In general, most of the product value is captured outside of Afghanistan by the importers and/or retailers. Except for the few large producers, most growers are in a weak negotiating position and often accept unfavorable conditions. Collectors perform a consolidating function given the vast fragmentation of production. Commission agents add efficiency to the chain by lowering costs for importers (often at the expense of quality); however, most of this value is captured abroad. The Wholesaler is a key player in the chain, especially in Kandahar and Kabul. They process, package and ship the product. In Jalalabad, their value-added is minimal, quite often resulting only in consolidating and re-shipping products without further grading and/or repacking.

Financing and Payments

Financing and payment collections vary mostly by whether it is a fresh or dry product. In the fresh product value chain, pre-harvest contracts are the norm. These are usually financed either by the local wholesaler/ exporter or by the importer through his agents. Fees charged for this financing as well as the commissions charged abroad at the auction add unnecessary costs to the chain. Furthermore, due to the lack financial institutions servicing Letters of Credit, payments are often made through Pakistani money dealers that charge comparatively higher rates. With respect to dry products, financing is not utilized and partial payments are made at the time of placing the order with the balance being paid once the shipment reaches the border. Money dealers are commonly used in this transaction as well.

VII. Export Markets: Dubai, UAE

General Characteristics

Although domestic consumption in the United Arab Emirates maybe relatively high, Dubai serves primarily as a distribution hub for the near-east and northern Africa. Low re-export tariffs (1%) have turned this city into a major shipping port. Cost competition is fierce and quality is of the highest marks internationally (low quality can also be found). It is difficult to operate a profitable business in Dubai unless you are extremely competitive. Often what is sold in Dubai are “fire sale” items, sometimes below cost.

Afghan Products

Products are imported from Afghanistan, although not in significant quantities (see Appendix E). These products are not very competitive on the quality side; and CIF prices usually make them relatively expensive. Iran is the major competitor for the Afghan products, and usually wins due to better appearance, packaging, and better prices. Afghan product could compete on a mid-low quality tier; however, transport costs usually make them lose out to Iranian products.

Traders

The general attitude of Dubai traders is that they welcome Afghan products. They do need to enter the market at prices lower than Iranian counterparts (ex. Raisins, 20-30% less). Few to none work with Afghan products due to their lack of competitiveness, poor presentation, and relative cost. However, price comparisons point to some possible opportunities. For example, early harvest seedless grapes may have a window of opportunity (see Appendix E). In any case, Afghan products will generally be more competitive if they look eastward to compete (ie. India, Taiwan, Japan, etc.). This is mainly due to the transport cost advantage (or less disadvantage) it would have versus competing nations (ex. Iran, Turkey).

Opportunities to further investigate

Wholesale prices in Dubai point to the following commercial possibilities:

- Pine Nuts (unshelled)
- Grapes (Thompson seedless)
- Pistachios (unshelled)

VIII. Constraints and Limitations

Production

Almost all products need drastic improvements in agricultural production practices. For example, vineyards need trellises, all orchards need proper irrigation, etc. Exceptions could include pine nuts, which are harvested from wild/natural forests. Despite the drought, there is enough water to supply all needs – only lack of proper irrigation systems. In general, heavy investment is required (equipment, training) and several years (especially orchards) before production practices and yields reach international levels.

Processing

Sorting, grading, cleaning, packing are poor. However, these can be overcome in short run. The greatest opportunity in the short run for Afghanistan lies in proper processing, packing, presentation. Lack of equipment, materials and training are significant.

Logistics & Facilities

Lack of proper roads (limited or poor asphaltting, no highways), refrigerated trucks, cold storage facilities cripples Afghanistan's capability to reach better markets, capture value, control price volatility. Dependence on Pakistani logistics.

Markets

Lack of market alternatives is hindering Afghanistan's traders' ability to capture value. Direct trading relationships are lacking. Pakistan captures much of value added. Indian middlemen go directly to Afghanistan. Even domestic processing options (juices, canned, etc.) do not exist to form a price floor for products.

Market Information

Growers have little to no market information to make informed decisions. Traders have a little bit more, but limited by mostly/only interacting with Pakistan, sometimes India.

Marketing Philosophy

Traders often make decision based on investment recovery rather than opportunity costs. This often results in losses and poor market efficiency. Poor risk-reward analysis often leads to unnecessary exposure to commercial risk.

Commercial /Financial

No banks exist to clear commercial transactions. Letters of Credit are non-existent. Money traders in Pakistan fill this void. There's no product insurance, no commercial code and no

official contracts (Ministry of Commerce ends up dedicating much of its time in resolving commercial issues diplomatically). All this increases risk, and operational costs.

Provincial Taxes

Unofficial regional “tolls” still exist and increase costs. Much based on regional war-lord control. Official duplication of taxes also exist as product passes from one province to another.

Institutional

There is a need for regulating tariffs, grades & standards, collecting statistics and supporting the trade through international marketing.

Weight and Measures

Lack of unification results in disputes and difficulty in price resolution. Example: 1 Man equals 4.5 kg in Kandahar, 7 kg in Kabul, 8 kg in Heart, and 10kg in Quetta. Often results in arguments, inaccurate market information, disputes over shipments, re-weighing and reloading.

IX. Major Conclusions

Product-oriented Conclusions

The Operational Feasibility (see Table 4) of each product is ranked by evaluating the supply chain; current Production Practices (costs, yields); current Product Quality (inherent product characteristics, presentation); and current state of Logistics (processing plants, grading, handling, cold storage, transport).

Table 4: Ranking of Operational Feasibility				
PRODUCT	Production Practices	Product Quality	Logistics	OVERALL
<i>Primary</i>				
Almonds	●	●	●	●
Cumin	●	●	●	●
Figs (dried)	●	○	●	○
Grapes	○	●	○	○
Peanuts	●	●	●	●
Pine Nuts	●	●	●	●
Pistachios	○	●	●	●
Pomegranate	●	●	●	●
Raisins	●	●	●	●
Walnuts	●	●	●	●
<i>Secondary</i>				
Apples	○	●	○	○
Apricots (dried)	●	●	●	●
Apricots (fresh)	○	○	●	○
Hang	●	●	●	●
Melon	●	●	●	○
Onion	○	●	○	○
Potatoes	○	●	○	○
Tomatoes (dried)	●	●	●	●

Key: ○ = Low ● = Medium ● = High

The Income Potential (see Table 5) of each product is ranked by evaluating the value chain; its Competitiveness in the international market (cost, quality); the opportunity presented to easily capture value in the supply chain (grading, packaging, etc.); and by potential scalability and volume impact.

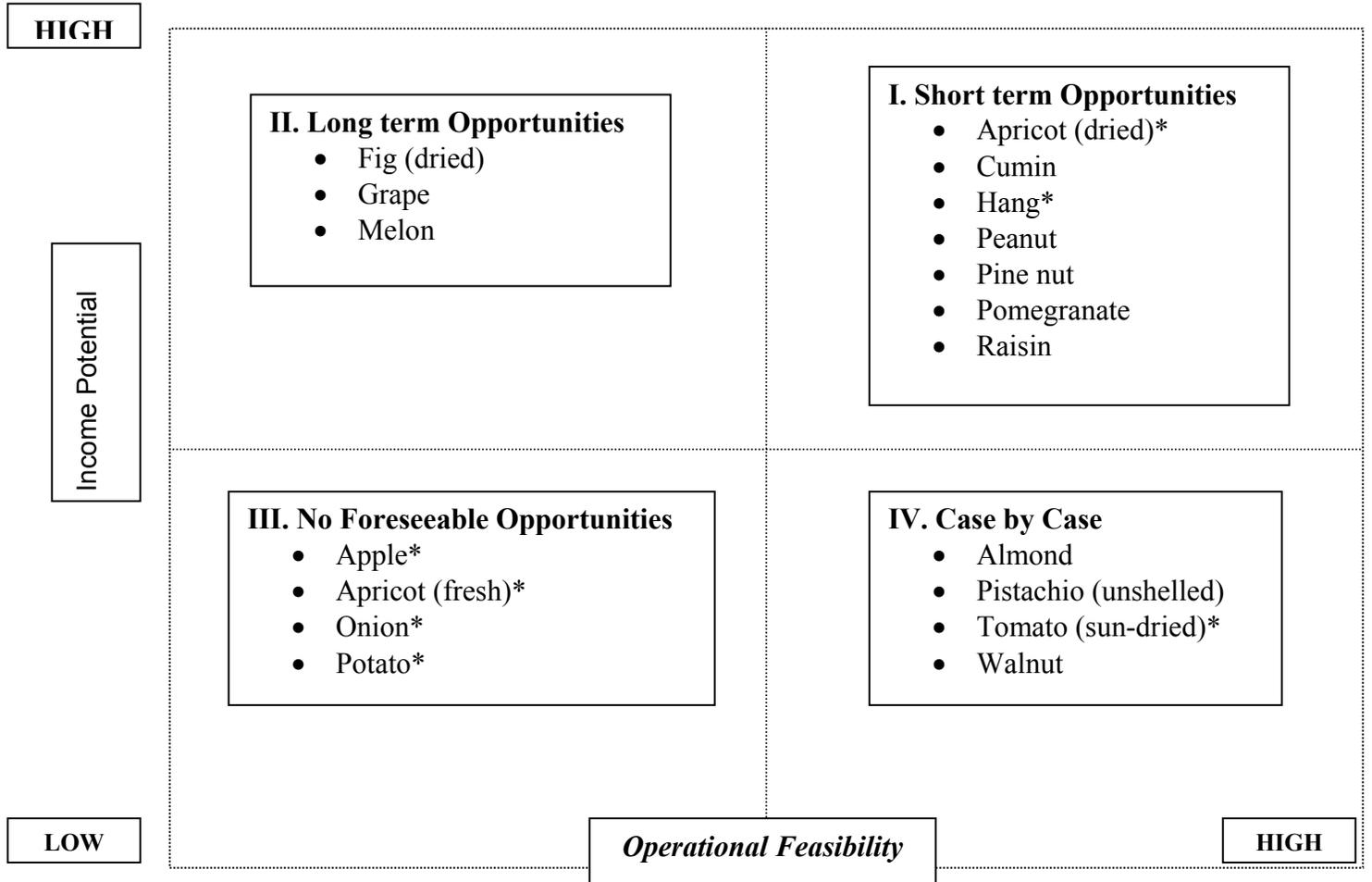
Table 5: Ranking of Income Potential				
PRODUCT	International Competitive-ness	Opportunity for Value Capture	Scalability and Volume Impact	OVERALL
Primary				
Almonds	○	◐	◐	○
Cumin	◐	●	●	●
Figs (dried)	◐	●	◐	●
Grapes	◐	◐	●	●
Peanuts	◐	●	◐	●
Pine Nuts	●	●	◐	●
Pistachios	○	◐	◐	○
Pomegranate	●	◐	◐	●
Raisins	◐	●	●	●
Walnuts	◐	◐	◐	○
Secondary				
Apples	○	◐	◐	○
Apricots (dried)	◐	◐	●	●
Apricots (fresh)	○	○	●	○
Hang	●	◐	◐	●
Melon	◐	◐	●	●
Onion	○	◐	◐	○
Potatoes	○	◐	◐	○
Tomatoes (dried)	◐	◐	◐	○

Key: ○ = Low ◐ = Medium ● = High

Mapping each product's *Operational Feasibility* against *Income Potential* on a chart we can conclude that export opportunities can be prioritized into four categories (see Figure 1):

- I. **Short Term Opportunities** –products are “low hanging fruit” that present favorable income potential that with little operational investment can result in significant short term value capture.
- II. **Long Term Opportunities** –products present a favorable income potential, but require significant investment on the operational and production side to fully capture value.
- III. **No Foreseeable Opportunity** –products have low income potential and require significant operational investments. Therefore, they do not currently present opportunities for the export market.
- IV. **Case by Case** –products require little operational investment in the short term; however, their income potential is uncertain. They should be evaluated in more detail on a case by case approach.

Export Opportunities (Figure 1)



** these products evaluated based on limited information*

Process-oriented Conclusions

We can take a three-fold approach in summarizing the major process-oriented conclusions:

Supply Chain

- Poor production practices.
- Unsophisticated processing and packaging.
- Lack of proper post-harvest handling.
- Lack of industry standards for grading.
- Non uniform weights / measures.

Value Chain

- Lack of price information.
- Poor marketing practices and market channel management.
- Lack of contract law, lack of signed contracts make conflict resolution difficult (no judicial system either).
- No formal financial clearing. Drafts made through Pakistani dealers often add 3% to overall costs.

External Factors

- Communication and access to final importer and customers.
- Transportation delays, both in Afghanistan and in Pakistan (takes approximately 10 days from Kandahar to the Indian border).
- Illiteracy is a major issue among traders.
- No cooperative activity to market collectively.
- Lack of governmental support and controls.

X. Recommendations and Next Steps

Three alternative approaches are suggested for the next steps to take:

1. **Product Focus**: select horticultural product(s), and implement crop-specific project.
2. **Process Focus**: select specific constraint(s) to remedy, and implement process-specific projects.
3. **Hybrid Focus**: select horticultural product(s) and constraint(s) to remedy, and implement a hybrid project.

Product Focus

The conclusions reached in the prioritization table (see Figure 1) would be used to select the top horticultural products. A more detailed analysis of the supply and value chains would be performed, data would be verified in international markets (India, Pakistan, Far East) as well as against previous production side studies, and a product-specific project would be defined and implemented.

For example, pine nuts could be chosen as a target product. The project would encompass all steps needed to successfully position and export Afghan pine nuts internationally. This may include setting up a specific pine nut grower association, establishing a local roasting and packaging plant, participating in regional trade shows, implementing marketing schemes, selecting strategic and commercial alliances, etc....

The major advantage of this approach is that a specific product would be successfully exported and would serve as an example to the industry.

The major disadvantage is that the benefits are limited to an isolated, smaller segment.

Process Focus

Major constraints and limitations would be chosen among those identified in Chapter VII. A more detailed analysis of the nature of the constraint would be made, the specific actions to be taken would be confirmed, partners and allies would be identified, and a process-specific project that would cover a particular need shared by multiple products would be implemented.

For example, lack of market information could be chosen as a major constraint and limitation. The solution chosen could be setting up an AM radio station dedicated to transmitting market information to growers and traders alike. The project would define the information needed, equipment necessary, the format of the programming, the team of researchers gathering market data, etc....

The major advantage of this approach is that benefits of the project are shared by the majority of the industry. The major disadvantage there is no guarantee that any product will be successfully exported.

Hybrid Focus

A product with good export potential, along with a major industry-wide constraint and limitation would be chosen. For example, grapes and raisins could be chosen as product-specific projects along with restoring an irrigation system in a particular region as a process-specific project.

The major advantage of this approach is that not only would a successful export case can be presented, but at the same time several products would benefit from the implementation of process-specific project. The major disadvantage would be the complexity inherent in managing and implementing a hybrid project.

The following are a list of alternative recommendations and specific action steps that can be incorporated into the three approaches presented above.

Product-oriented Recommendations

The recommendation here is to choose products in Quadrant I (see Figure 1), and work on all steps of the supply and value chain to successfully create an export operation. Alternatively, products in Quadrant II can be chosen for projects with longer time-frames. In parallel, products in Quadrant IV can be reviewed to identify changes in the market and business environment that would make them more attractive.

Process-oriented Recommendations

- Establish extension and training centers in the country to teach and improve production practices.
- Establish extension and training centers in the country to teach and improve marketing and commercial practices.
- Create industry specific cooperatives to collectively define standards for grading and implement marketing strategies.
- Work with Ministries to implement standardized, uniform weights & measures.
- Establish a new communication media to disseminate market and price information across the industry.
- Work with Ministries to establish commercial codes and contractual law.
- Work with international banks to have them offer clearing and commercial trade services.
- Transportation delays, both in Afghanistan and in Pakistan (takes approximately 10 days from Kandahar to the Indian border).
- Establish processing and packaging plants.
- Build multiple purpose storage facilities.

Next Steps

The next steps suggested are:

1. Decide the recommendation approach.
2. Validate product process conclusions by researching other importer countries and previous consulting studies.

3. Select specific project(s) to implement.
4. Define action plan and team.
5. Implement project(s).

XI. Appendices

A. Supply & Value Chains

1. Pistachios
2. Raisins
3. Cumin
4. Almonds
5. Grapes
6. Pomegranate
7. Pine nuts
8. Peanuts
9. Walnuts
10. Melons

B. Illegal Poppy Cultivation

C. Successful Export Case: CADG

D. Export Statistics

E. Import Statistics (Dubai, UAE)

F. References

Appendix A01: Sample Supply & Value Chain

Unshelled Pistachios through Kabul to India

Supply Chain

1. Families harvest from wild orchards and un-shell at home.
2. Jalab buys from smaller families, and has ability to store locally small quantities.
3. Wholesaler in Kabul will place order with Jalab upon receipt of order from customer in India.
4. Wholesaler performs first sort: separating bad color, damaged, shells.
5. Wholesaler performs second sort: grading by weight and size.
6. Wholesaler performs third sort: (same as first sort).

Note: 3 people sort 70kg

7. Wholesaler packs in 500g plastic bags, in 20kg wooden box.
8. Wooden box is painted with wholesaler's info, customer logo, quality and weight information.
9. Wooden boxes are covered by "bojak" bag and shipped by truck through Pakistan to Indian border.
10. Pays duties and informs Indian customer for pick-up.

Alternatively:

- 3a. Jalab alternatively will ship product to a major export city (ex. Mazar-e-Sharif, Kabul) and store there up to 6 months, although typically stores for just 1 month.
- 3b. Wholesaler buys from Jalab locally in Kabul.

Value Chain

Jalab pays farmer:	\$7 to 7.50 / kg.
(harvests and transports to Kabul)	
Afghan Wholesaler pays:	\$8.00 / kg.
(sorts, packs, transports, duties until border = approx. \$1.10/kg.)	
Indian importer pays:	\$9.85 / kg.
(takes delivery at border)	
Indian retailer pays:	\$10.35 / kg.

Note: New customers pre-pay 30% upon placing order and balance when goods are ready to be shipped. Previous customers pay 70-100% as goods reach Pakistan border.

Appendix A02: Sample Supply & Value Chain

Raisins (various)

Supply Chain: Raisins through Kandahar to India

1. Grower or commission agent harvest grapes.
2. Grapes are shade dried on sticks in “raisin houses” (kishmish khaneh) or sun dried on roof-tops and other flat surfaces.
3. Raisins are collected and put in sacks (neither material nor size are standardized).
4. Grower takes certain amount of sacks to market, depending on income need and market prices. Otherwise, he will store at grower site.
5. Wholesaler purchases according to orders received, and at times speculating on future orders and thus stores locally.
6. Wholesaler processes: (i) grading by size/appearance; (ii) cleaning by fans; (iii) pack in generic plastic bags of either 250 or 500g; (iv) pack in 16-20 kg boxes/crates marked with customer identification and “Transit”.
7. Wholesaler sells at predetermined price when order was placed.
8. Goods (with bills) are shipped to Quetta, Pakistan where Afghan clearing agents receive, check and reload onto Pakistani transport up to the Indian border.
9. Customer agent receives goods at the Indian border.

Alternatively:

7. Commission agent (representing Indian client) buys from farmers and/or smaller wholesalers at the spot market, acting purely on a firm order.

Notes

- Green raisins typically take 40-50 days to dry in the shade; red raisins 7-10 days in the sun; and abjoosh raisins 8-12 days in the sun.
- Sun dried raisins are first dipped in a limestone solution.
- Grading is based on color, size and appearance. In order of best to worst: Select; No. 1, No. 1.5; No. 2.
- In Kandahar there are approximately 20 main traders, 3 of which have their own dry storage houses. Storing is not common, since most do not take risks.
- It takes approximately 10 days from Kandahar to the Indian border. Packing & processing vary from 2 to 5 days.
- Wholesaler typically pays costs (transport, duties, bribes) up to Indian border.
- Reloading in Pakistan has no significant effect on shipping time; however, causes approximately 5-10% damage and/or theft; and increases total costs by approximately 1%.
- Payment methods: upon reception of order, “drafts” are made through money dealers in Pakistan. Once commodity reaches the Indian border, wholesaler collects funds in Pakistan, either fully or in installments.
- This form of payment raises financial costs of transaction by approximately 3% (over a typical banking system of 1%).

Supply Chain: Raisins through Jalalabad to Pakistan

1. Grower in northern province harvests, dries and packs (ex. Shomali variety).

2. Grower partner in Kabul receives and performs some sorting.
3. Trader in Jalalabad buys and resells, exporting to Peshawar, Pakistan.
4. In Peshawar, raisins are sorted and repacked for final customer.

Alternatively:

2. Trader in Jalalabad buys directly from Grower (less common).

Value Chains: through Kandahar to India, Germany

1. Medium Quality Round Green Raisin

Afghan Wholesaler pays: \$0.91 / kg.
 (sorts, packs, transports until border)
 Indian importer pays: \$1.22 / kg.
 (takes delivery and pays at border)
 Indian retailer pays: \$2.61 / kg.

2. Medium Quality Long Green Seedless Raisin

Afghan Wholesaler pays: \$2.87 / kg.
 (sorts, packs, transports until border)
 Indian importer pays: \$3.48 / kg.
 (takes delivery and pays at border)
 Indian retailer pays: \$6.00 / kg.

3. High Quality Shundukhani Raisin (specialty item)

Afghan Wholesaler/exporter pays: \$6.26 / kg.
 (sorts, packs, transports, duties until border = approx. \$1.10/kg.)
 Indian importer pays: \$6.96 / kg.
 (takes delivery at Pakistani border; later pays \$1.74/kg. duty)
 Indian consumer pays: \$12.50 / kg.

4. Medium Quality Red Raisin

Afghan Wholesaler/exporter pays: \$1.22/ kg.
 (sorts, packs, transports)
 German importer pays: \$2.96 / kg.

Value Chains: through Jalalabad to Pakistan

1. Sun dried Shomali Raisin

Afghan Trader pays: \$0.52 / kg.
 (sorts, packs, transports until border)
 Pakistani importer pays: \$0.70 / kg.
 (takes delivery and pays at border)

1. Sun dried Ghazni Raisin

Afghan Trader pays: \$0.70 / kg.
 (sorts, packs, transports until border)
 Pakistani importer pays: \$0.87 / kg.
 (takes delivery and pays at border)

Appendix A03: Sample Supply & Value Chain

Cumin through Kandahar to Pakistan, India

Supply Chain

1. Grower harvests and transports small amounts to the market for immediate sale. Grower sells on a need-basis, storing the remainder at the village.
2. Collectors buy product, paying cash. Some cleaning is done. Some may store.
3. Traders/wholesalers buy from collectors and clean/grade more, and sell to Pakistani or Indian customer, almost always based on an order.

Alternatively:

3. Commission agent (representing Indian client) buys from Collectors.

Value Chains: through Kandahar to Pakistan, India

1. “White” Cumin to Pakistan

- Afghan Wholesaler pays: \$0.70 / kg.
(cleans at approximately \$0.11/kg., packs in bulk, transports until border)
- Pakistani importer pays: \$0.87 / kg.
(takes delivery and pays at border; cleans and repacks according to customer order)
- Pakistani retailer pays: \$0.90 / kg.

2. “Black” Cumin to India

- Afghan Wholesaler pays: \$5.22 / kg.
(cleans, packs in bulk, transports until border)
- Indian importer pays: \$5.91 / kg.
(takes delivery and pays at border; cleans and repacks according to customer order)
- Indian retailer pays: \$6.96 / kg.

Notes

- Highly fragmented production. Growers mostly store at the village and frequently visit the central market with small amounts according to their need to sell.
- Collectors are risk-takers in this chain.
- Traders compete with Commission Agents; but trader usually has better payment terms.
- Commission Agents make deals in the absence of traders and bridge the gap of the quantity not absorbed by the traders.
- Complaints about low prices this year; many lost by storing and speculating on favorable trade agreements, but since it didn't come through, prices dropped dramatically.
- According to local wholesalers, US was developing trade agreement with Afghanistan, but Pakistan “interfered” and positioned itself as a less expensive supplier.
- Complaints about increased local/provincial taxes and “tolls”.
- Few Afghan traders monopolize trade; others aren't awarded trading/transit permits; accusations of favoritism on behalf of the local Chamber of Commerce.
- Payment methods are same as raisins, but smaller traders are often paid late/worse.

- Cumin must be transported by train through Pakistan, leading to greater loss due to damage and theft.

Appendix A04: Sample Supply & Value Chain

Almonds through Kandahar to India

Supply Chain: through Kandahar to India

1. Grower harvests and transports small amounts (always in-shell) to the market for immediate sale. Grower sells on a need-basis, storing the remainder at the village.
2. Collector buys on cash-basis, grades, contracts unshelling and stores until sale.
3. Traders/wholesalers buy from collectors and clean/grade more, and sell to Pakistani or Indian customer, almost always based on an order.

Alternatively:

3. Commission agent (representing Indian client) buys from Collectors.

Value Chains: through Kandahar to India

1. In-shell Almonds

Afghan Wholesaler pays:	\$0.65 / kg.
Indian importer pays:	\$0.75 / kg.
Indian retailer pays:	\$1.75 / kg.

2. Unshelled Almonds

Afghan Wholesaler pays:	\$2.22 / kg.
Indian importer pays:	\$3.30 / kg.
Indian retailer pays:	\$4.52 / kg.

Notes

- Almonds follow a similar supply chain scheme as in cumin, and involve the same Collectors/Traders.
- Collectors contract un-shelling (usually performed manually in private homes).
- Soft-shell almonds are usually commercialized in-shell. 80% of hard-shell almonds are unshelled.
- Payment terms are the same as with cumin.
- Competition is high; many countries compete; market channel options are limited; absence of government support / policy is evident.
- Favoritism limits the number of permits issued to trade directly with India.

Supply Chain: through Kabul to Pakistan, India

1. Grower harvests.
2. Trader's representative purchase from growers.
3. Almonds are unshelled in Kabul, mostly manually although machines exist.
4. Trader sorts (2 grades) and packs in 500gm and 1kg plastic bags in 20kg crates.
5. Almonds are shipped to Pakistan (Grade 2) and India (Grade 1).

Alternatively

2. Smaller traders (“hawkers”), also purchase and transport to Kabul market.
2. Indian commission agent compete with local traders to complete client orders.
4. Trader packs into bags supplied by Indian customer (with company identification, etc.).

Notes

- Almonds are transported to Kabul in shells to prevent damage and preserve shelf-life.
- Un-shelling machines in Kabul were imported from Iran, but origin unknown.
- Machine un-shelling quality is not good (broken kernels), and since it requires pre-soaking of almonds, they frequently encounter molding in storage.
- Un-shelling by hand is currently cheaper since the families frequently accept the broken shells as payment (used for heating).
- Growers are paid cash; hawkers in installments (10-20 days).
- Traders are usually paid cash at the border; otherwise, they are paid using the “hawalah” system.
- Traders often speculate and store the almonds.
- From grower purchase to final pack takes about 10 days. To reach the Indian border takes another 6-10 days.
- Trader feels his biggest constraint is the lack of alternative markets.

Value Chains: through Kabul to India

1. Unshelled Almonds

Afghan Wholesaler pays:	\$3.92 / kg.
Indian importer pays: (FOB Kabul)	\$4.17 / kg.
Indian importer pays: (at Indian border)	\$4.79 / kg.
Indian retailer pays:	\$5.21 / kg.

Appendix A05: Sample Supply & Value Chain

Grapes (various)

Supply Chain: Grapes through Kandahar to Pakistan

1. Contractor leases vineyard from the grower.
2. Contractor organizes and pays for harvest, packing and transport.
3. Grapes are sent to trader/financier in Pakistan, on an exclusive “Qutualla” contract.
4. Grapes are auctioned in Pakistan, repacked and sent to customer.

Value Chain

1. Round Seeded Green Grape

Afghan contractor pays:	\$0.21 / kg.
Pakistani importer pays:	\$2.47 / kg. (for break-even)

2. Long Seedless Green Grape

Afghan contractor pays:	\$0.27 / kg.
Pakistani importer pays:	\$2.53 / kg. (for break-even)

Notes

- Two main types of leasing contracts are the norm: (i) pay for harvest on weight base; (ii) pay for harvest of whole vineyard.
- Contracts were formerly established from berry-set onward; however, the recent droughts have pushed agreements to maturity onward.
- A typical grower is paid 50% at the time of agreement and the balance during the middle of harvest.
- Harvest is usually done early morning. Grapes cross the border by nightfall at Chaman and arrive to the auction within 18 hours of harvest. Drivers are paid incentives for early delivery.
- Reloading in Pakistan is estimated to cause 5% damage.
- Traders in Pakistan are financing these contracts for 10% commission of the auction sale price.
- Contractors believe they have no other market channels, and without capital cannot negotiate better terms. Larger growers harvest and ship to auction site by themselves, and are able to save costs and negotiate better prices.
- Some Afghan growers on the Pakistani side (near Quetta) are exporting to Bangladesh and Gulf States in refrigerated containers.

Supply Chain: Grapes through Kabul to Pakistan

1. Trader contracts directly from grower right before harvest.
2. Grower harvests.
3. Trader’s representatives and workers sort (2 sizes), clean and pack in 14kg. cartons.
4. Trader transports directly to Peshawar, paying transport and custom duties.
5. Trader sells at auction; auctioneer charges 6% commission. Payment is made immediately.

Notes

- The grapes in this supply chain originate in the Shomali province, however, also include grapes from Parvan, Lowgar and Ghazni.
- Before making the deal with the grower, the trader first evaluates Pakistani market conditions, then goes and negotiates on a cash for weight basis.
- Trader buys directly from the grower soon before harvest.
- Time from harvest to auction is about 2 days.
- No reloading is done for the trucks with route permits.
- Grapes auctioned at Peshawar mostly remain for Pakistani consumption.
- Previous year, this trader exported to India (4 day trip), but grapes arrived mostly rotten.

Appendix A06: Sample Supply & Value Chain

Pomegranates through Kandahar to Pakistan

Supply Chain

1. Contractor leases vineyard from the grower.
2. Contractor organizes and pays for harvest, packing and transport.
3. Grapes are sent to trader/financier in Pakistan, on an exclusive “Qutualla” contract.
4. Grapes are auctioned in Pakistan, repacked and sent to customer.

Value Chain

1. Medium Quality

Afghan contractor pays:	\$0.78 / kg.
Pakistani importer pays:	\$3.04 / kg. (to reach break-even)

2. High Quality

Afghan contractor pays:	\$1.09 / kg.
Pakistani importer pays:	\$3.35 / kg. (to reach break-even)

Notes

- Very similar contracting scheme as in grapes. Two main types of leasing contracts are the norm: (i) pay for harvest on weight base; (ii) pay for harvest of whole vineyard.
- Contracts are established early because most growers are in need of money. Prices paid are lower.
- A typical grower is paid 50% at the time of agreement and the balance during the middle of harvest; however, since contracts are usually established earlier (because of most growers' need of money) lower prices are paid.
- Reloading in Pakistan is estimated to cause 1% damage.
- Contractors enjoy greater flexibility given pomegranates are typically stored at the production site (in the shade) from 1 to 2 months, awaiting favorable market conditions.

Appendix A08: Sample Supply & Value Chain

Peanuts through Jalalabad to Pakistan

Supply Chain

1. Grower harvests pods.
2. Collectors buy product fresh and transport to market.
3. Traders/wholesalers buy from collectors, repack into 30-35 kg. jute bags and sell to Pakistani importer.
4. Pakistani importer roasts, reprocesses, repacks and sells (often exports to India).

Alternatively:

2. Grower takes harvest to market himself.

Value Chains: Medium Quality Peanuts

Afghan Wholesaler pays: \$0.61 / kg.
(transports until border, Peshawar)

Pakistani importer pays: \$0.74 / kg.
(cleans, roasts and repacks according to customer order)

Appendix A09: Sample Supply & Value Chain

Walnuts through Jalalabad to Pakistan

Supply Chain

1. Growers harvest nuts from their privately owned orchards.
2. Collectors and/or Traders from other provinces visit and purchase product.
3. Traders /wholesalers buy from collectors and clean/grade more, (usually repacks into 70-75kg. jute bags with trader identification) and sell to Commission Agent in Peshawar representing the Pakistani importer.
4. Pakistani importer roasts again (if needed), un-shells by hand, sorts, cleans and packs for re-export, typically to the Gulf States, Turkey and China.

Alternatively:

3. Trader sells walnuts to Kabul where they are unshelled.

Value Chains

1. Walnuts (in shell)

Afghan Trader pays: \$0.70 / kg.

Pakistani importer pays: \$0.85 / kg.

2. Walnuts (unshelled)

Afghan Trader pays: \$1.74 / kg.

Pakistani importer pays: \$2.09 / kg.

Appendix A10: Sample Supply Chain

Melons through Kabul to Pakistan

Supply Chain

1. Grower harvests in Mazar-e-Sharif and/or Konduz.
2. Small traders transport melons to Kabul.
3. Traders unload at Kabul's specialized wholesale melon market.
4. Kabul trader sorts and reload onto trucks (no packing) headed to Peshawar.
4. In Peshawar, melons are unloaded sorted into different piles (by size).
6. Melons are auctioned by pile.

Appendix B: Illegal Poppy Cultivation

Comparative economics overwhelmingly favor the illegal cultivation of poppy.

- Poppy growers earn typically 5 times the profit of the highest margin comparative commodities (ex. Black cumin, dried figs).
- A grower cultivating black cumin can expect revenues of approximately \$300 per jirip (5 jirips = 1 hectare).
- A grower cultivating poppy can expect revenues of approximately \$4,100 per jirip.
- Poppy production costs, however, are higher than those of black cumin.
- The value of poppy extract is about \$460/kg.
- The value of processed extract (once the Taliban were ousted, it's no longer processed locally) is about \$1850/kg.
- Average poppy extract production is estimated at 9 kg./jirip.
- A poppy grower usually negotiates sale after harvest.
- Economic incentives to cultivate poppy are so high and law enforcement so weak that the only real reason preventing a grower from cultivating it would be his personal values / conscience.

Appendix C: Successful Export Case

Central Asia Development Group

The Central Asia Development Group (CADG) is a private enterprise headquartered in Singapore. The small group of professionals have vast experience in exporting horticultural products from developing regions. In Afghanistan, they administer NGO funds and have succeeded in establishing export operations for raisins and vegetable seeds. Their main office is located in Kandahar while a large operational office is maintained in Helmand. Their raisin operation has been successful and proves the viability of Afghan horticultural exports.

The project started in July of 2002 with donor money. Utilizing an abandoned raisin processing plant in Helmand (which already had machinery of Californian origin), approximately \$75,000 was initially invested (excluding working capital). The project is expected to be self-sustaining and/or profitable sometime between November of 2003 and January of 2004

The operations model is a hybrid of Turkish and Californian systems, utilizing a 3-table sorting process and a clean – wash – clean process. The plant has averaged 80-100 tons of raisins per month; however, it is important to note that CADG has an unmet monthly demand of 200 tons.

CADG customers are currently located in the UK, Germany, Czechoslovakia and Taiwan. Lower transportation costs to the Far East should eventually allow Afghanistan to compete better against Turkey and Iran. However, given the Pakistani constraints (i.e. if you want to export out of Karachi, goods must travel by train), CADG often ships through Herat to the port of Bandar Abbas in Iran, and loads onto containers there.

Comparative shipping times:

Kandahar to Bandar Abbas takes between 8 to 10 days.

Kandahar to Karachi by train can take between 4 to 6 weeks.

Kandahar to Karachi by truck (if allowed) would take 2 to 3 days.

Other potential market constraints identified by CADG include possible over-production by Turkey and Iran, driving prices down; and the common practice of Afghan traders over-speculating on price and sitting on their stock. CADG has also views corruption in the public sector as a significant detriment to their costs.

In summary, the key success factors for CADG have been the introduction of improved grape production practices; greater processing and quality control; and increased marketing activities (ex. international tradeshows, grower associations).

Appendix D: Export Statistics

The Chamber of Commerce of Jalalabad has no official statistics to offer. According to the President and Deputy President of the Chamber, the top exports have been peanuts, walnuts and pine nuts. Their personal estimates vary greatly with those of traders (see Table 6):

Product	Ch. of Commerce	Leading Trader
Peanuts	400-500 MT/yr	3000-4000 MT/yr
Pine Nuts	10-12 MT / yr	500 MT/yr
Walnuts	20-30 MT / yr	

The Chamber of Commerce in Kabul has approximately 4,300 businesses registered. Of these, approximately 2,000 are foreign companies. The local Chambers of Commerce report to the one in Kabul, and the Minister of commerce presides over its Board of Directors.

Bilateral agreements with several nations are currently under discussion (India, Iran, Japan, Pakistan, UK, USA). They claim to have #2 favored nation status with the USA, resulting in 5,700 items being declared exempt from all tariffs and duties. Agreements with India have resulted in the exemption of tariffs for 7 products and 50% reductions for many others (see Table 7).

Product	Reduction Applied
Almond	50%
Apricot (dry)	0%
Apricot (fresh)	50%
Apple	50%
Cumin seed	50%
Fig	(exempt)
Grape	50%
Melon	(exempt)
Onion	0%
Peanut	0%
Pine Nut	(exempt)
Pistachio	(exempt)
Pomegranate	50%
Potato	0%

Tomato	0%
Raisin	50%
Walnut	50%

Source: Chamber of Commerce – Kabul

The Central Statistics Office of the Ministry of Planning has been gathering official import and export data (see Table 8). This information is consolidated from the various offices they have in the major export cities. They admit that not all exports are declared and that the value assigned represents pro-forma invoices that often are adjusted up or downwards after shipment.

PRODUCT	1380 (2001-02)		1381 (2002-03)	
	MTons	\$ 000	MTons	\$ 000
Almond (in shell)	339	204	5	10
Almond (unshelled)	166	299	372	409
Apple	38	27	304	207
Apricot (fresh)	3342	1003	1850	740
Apricot (dry)	n/a	n/a	12,988	24,151
Cumin Seed	70	77	53	91
Fig (dry)	1.6	1.4	10	8
Grape	4442	2221	3255	2343
Melon	4851	970	897	448
Pine Nut	n/a	n/a	1040	8883
Pistachio (in shell)	130	312	n/a	n/a
Pistachio (unshelled)	1059	8984	1959 (in+shelled)	4887 (in+shelled)
Pomegranate	42	29	1087	1848
Raisin (red)	5580	1116	n/a	n/a
Raisin (green)	13	12	n/a	n/a
Walnut (in shell)	2	0.3	n/a	n/a
Walnut (unshelled)	149	98	1	1

Note: Dollar values may be inaccurate due to pro-forma invoicing.
Source: Central Statistics Office, Ministry of Planning of Afghanistan

Appendix E: Import Statistics – Dubai, UAE

The reputation of Afghan products in Dubai does not seem to pose any significant deterrent to their commercialization. As long as price and quality are acceptable, traders are willing to do business. Dubai traders agree that in order to break into the market, Afghan products would need to compete below Iranian prices. Current examples in order to compete would be (although seasonally/relatively high):

Long Green Raisin:	\$0.68/kg. (FOB Quetta)
Golden Raisin:	\$1.00/kg. (FOB Quetta)
Brown Raisin:	\$0.45/kg. (FOB Peshawar)
Pistachio kernel:	\$3.38/kg. (FOB Quetta)
Pine Nuts:	\$6.08/kg. (FOB Karachi)
White Cumin:	\$1.22/kg. (CIF Dubai)
Black Cumin:	\$1.62 – 3.78/kg. (CIF Dubai)
Pomegranate:	\$0.60/kg. (CIF Dubai)
Thompson Seedless:	\$1.45/kg. (July)
Thompson Seedless:	\$1.10/kg. (August onwards)

Note: California has driven almond prices down, replacing almost all Iranian almonds. Local wholesale prices currently round \$5.00/kg for “size 18-20”.

One measure of Afghanistan’s competitiveness in the Middle East is its share of imports and re-exports of the Dubai, UAE market (see Table 9).

PRODUCT (Year 2002)	AFGHAN ORIGIN				IRANIAN ORIGIN			
	Imports		Re-exports		Imports		Re-exports	
	MTons	\$ 000	MTons	\$ 000	MTons	\$ 000	MTons	\$ 000
Almond (in shell)	0	0	5	10	489	922	161	295
Almond (unshelled)	9	16	104	254	1371	2760	330	723
Cumin Seed	70	77	0	0	2434	1312	25	57
Fig (fresh, dried)	0	0	0	0	588	314	36	24
Grape	0	0	0	0	78	143	0	0
Pistachio (in+shelled)	420	973	0	0	13,828	43,251	555	851
Raisin	49	24	0	0	32,330	13,824	195	116
Walnut (in shell)	0	0	0	0	139	165	21	24
Walnut (unshelled)	0	0	0	0	517	593	12	37

*Note: Dollar values may be inaccurate due to pro-forma invoicing.
Source: UAE Chamber of Commerce, Dubai*

Appendix F: References

Companies & Institutions Visited

Ali Akbar Zamani Trading LLC (Dubai)
Arjet Singh Trading Co. (Kabul)
Chamber of Commerce (Dubai)
Chamber of Commerce (Jalalabad)
Chamber of Commerce (Kabul)
Chamber of Commerce (Kandahar)
Central Asia Development Group (Kandahar; Kabul)
Dry Fruit, Nut and Spice Wholesale Market (Dubai)
Dry Fruit, Nut and Spice Wholesale Market (Jalalabad)
Dry Fruit, Nut and Spice Wholesale Market (Kabul)
Dry Fruit, Nut and Spice Wholesale Market (Kandahar)
Fresh Fruit and Veg. Wholesale Market (Dubai)
Fresh Fruit and Vegetable Wholesale Market (Jalalabad)
Fresh Fruit and Vegetable Wholesale Market (Kabul)
Fresh Fruit and Vegetable Wholesale Market (Kandahar)
Fresh Fruits Co. (Dubai)
Iran-Dubai Co. (Dubai)
Kabul University
Mahmood Khan Brokerage (Dubai)
Ministry of Agriculture (Kabul)
Ministry of Commerce (Kabul)
Ministry of Planning (Kabul)
Mirak Agricultural Services (Dubai)
White Star General Trading (Dubai)

People Interviewed

Haji Abdul Ahad, Trader (Kandahar)
Haji Dai Nazar, Trader (Kandahar)
Haji Gul Mohammad, Trader (Jalalabad)
Haji Hayat, Trader (Kandahar)
Haji Jalad Khan, Trader (Kandahar)
Haji Khawani, Trader (Kabul)
Haji Malem, Trader (Kandahar)
Haji Mobeen, Trader (Kabul)
Haji Nasrullah, VP-Chamber of Commerce (Kandahar)
Haji Nur Mohammad, Trader (Kandahar)
Haji Shai Malden, VP-Chamber of Commerce (Jalalabad)
Haji Shamsa Rahman, Pres Chamber of Commerce (Jalalabad)
Haji Taj Mohammad, Trader (Kandahar)
Mir Dad Pansheri, Chief Advisor – Ministry of Agriculture (Kabul)
Mr. Alhaj Mohd Ewaz Fedayee, President – Chamber of Commerce (Kabul)
Mr. Azam Wardak, President of Foreign Trade, Ministry of Commerce (Kabul)
Mr. Hamid, Trader (Kabul)
Mr. Jeff Paine, Exporter (Kabul)
Mr. M. Ali Watanyar, Chief – Central Statistics Office, Ministry of Planning (Kabul)
Mr. Rustami, Chief – Export Department, Chamber of Commerce (Kabul)
Mr. Said Hashim, Officer – Export Department, Chamber of Commerce (Kabul)
Mr. Sardar Mohammad, Trader (Jalalabad)
Mr. Steve Shaulis, Exporter (Kabul)
Mr. Tajamol, Officer – Export Department, Chamber of Commerce (Kabul)
Professor Nasratullah Akbarzad, Kabul University

APPENDIX C

Interview with Haji Abdul Qader Bakhtari Sept. 12, 2003

Mr. Bakhtari is probably the largest importer of Afghan horticultural goods into the U.S., where he has been residing for close to 15 years (New York). He has thirty years of international experience in the business, living throughout and importing products into the Middle East and Europe. Currently, he imports not only into the U.S., through New York and Los Angeles, but into other regions throughout the world, including Europe and Australia.

Products imported:

- dried mulberries (black, white)
- almonds
- raisins (black, green, red)
- pistachio
- dried apricots
- prunes
- pine nuts
- dried apples
- dried figs

Production of these items takes place in Afghanistan, and is then transported to Pakistan for cleaning, packaging and exporting.

Mr. Bakhtari has close ties with those who are actually delivering production in Afghanistan, many of them relatives and acquaintances. Thus he follows in-country production closely. His relationship with agents in Pakistan is also personal (i.e. relatives).

The primary problem and limitation in the import of Afghan products is the quality of the product. Quality is notably deficient in: mulberry, raisins, apricot. Mulberries typically don't go through appropriate cleaning, a process which in this case might require using toothbrushes for adequate quality. The drying process for apricots is often carried out with low standards of cleanliness. Raisins received frequently carry a small piece of stem or contain tiny pebbles.

On the other hand, great opportunities exist for Afghan products, especially if quality standards are raised. Amongst the most promising ones, where a large unsatisfied demand remains, are: dried apricots, dried mulberries, some kinds of raisins, pine nuts, dried figs, cumin and chickpeas. Particularly, there is also an attractive market that can be tapped into when it comes to organic dry fruit.

Afghan mulberries compete well with Turkey's production, selling at \$6-7/lb in the U.S. market. Kandahar's distinctive seedless raisins draw prices of \$7/lb rather than the \$5/lb of other raisins. Whereas Turkish dried apricots have a slight bitterness because of sulphur applications, the Afghan version has an advantage since sulphur is not used when drying

the fruit. Afghan pine nuts don't necessarily compete with Chinese pine nuts, since they are longer and thinner, slightly different in taste; they sell at \$10/kg. Chickpeas (dried, salted snack version) have great potential, since increased volumes of its importation would quickly be absorbed.

Even though most – if not all – of the clientele for these imports are Afghans and Afghan Americans, there is a great opportunity to capture American customers. Although neither tested nor advertised, it seems quite clear from experience that many of these dried Afghan products are remarkably appealing to the critical American consumer. Mr. Bakhtari felt confident that if campaigns were organized to offer samples, in small bags, of different Afghan products, large numbers of people would be enlisted as long term consumers of snacks consisting in dried Afghan fruits or nuts. He strongly recommended investing money available for the development of Afghan exports in carrying out this kind of campaigns.

APPENDIX D

Preliminary Kabul Horticulture Market Assessment **Kevin T. McNamara** **December 12-18, 2002**

The wholesale food market and retail food markets in Kabul are active and growing. The primary wholesale market is located on the north of Kabul in Khair Khona. The staple of the Afghan diet is nan, the traditional wheat bread. Afghans also eat a variety of vegetables, rice, and meats. Retail food sales of fresh vegetables, fruits, nuts, and staples are generally through a series of local, small, open-front shops or single item street vendors. I spent 7 days in Kabul visit wholesale and retail markets, the Ministry of Agriculture, the Faculty of Agriculture at Kabul University, FAO, USAID, IFDC, and ICARDA to observe and discuss the current state of wholesale and retail vegetable, fruit, dried fruit, and nut markets in Kabul. The 15th, 16th and part of the 17th I was accompanied by Dr. Nasir Saidy.

The Wholesale Market in Khair Khona

The wholesale vegetable market in Khair Khona was active in about one fourth of the market area. Given that it was winter in Kabul and there was limited local production to sell, the market seemed very busy. Generally, vegetables are sold in one section, fruits in another, and dried fruits and nuts at location across the street where rice, flour, cooking oil, and other imported products were available.

A variety of fresh vegetables from Pakistan and Nangarhar Province (Jalalabad) were available. Fresh cauliflower, carrots, turnips, red and white radishes, leeks, okra, peppers, and peas were available. Local potatoes, onions, carrots, and turnips were also available. Garlic from China (re-exported from Pakistan) was available. Several wholesalers who were unloading fresh produce from Nangarhar indicated that they had purchased the vegetables (cauliflower and white radishes) from farmers in Nangarhar Province a month or so earlier on pre-harvest contacts. They were then responsible for harvesting and shipping the product to Kabul. One wholesaler who said he brings 5-6 truckloads from Jalalabad per day indicated that he bought from a number of small farmers in two areas of Nangarhar. He is currently supplying cauliflower to the Kabul market. He indicated he would be supplying carrots, leeks, and other fresh produce from Nangarhar Province until crops in the Kabul region are available. He then brings produce from his farm as well as farms near his village in Parwan Province.

Produce was shipped to the Khair Khona market by truck, bus, taxi, car, and cart. Most of the vegetables arriving from Nangarhar Province were piled into the vehicle they were shipped in with no packaging. Potatoes, oranges, garlic and onions in stalls were stored in 25 kilo and larger bags. Apples and citrus were stored in their shipping boxes.

Pakistani vegetables—peppers, okra, eggplant, etc—had been shipped in boxes. Most of the wholesalers with Pakistani produce purchased it through brokers at the wholesale market in Jalalabad.

The fruit market was much less active. A number of wholesalers were selling fall apples for shipment to Pakistan as well as for consumption in the local market. Afghan apples (Kabul region) traditionally sell well in Pakistan. While apples still sell well, expansion of apple production in areas of Pakistan's Northwest Province has created domestic competition in Pakistan. Oranges and tangerines from Nangarhar Province and Pakistan were also available. Bananas were available in limited supply. Local fruit (grapes, pomegranate, and melons) were also available in very limited supply.

It was difficult to assess how much sorting or grading was done for produce arriving at the Khair Khona market. Cauliflower, easily the largest volume fresh crop in the market, arrived loosely packed in trucks, buses, and taxis. The heads were still protected to a degree by leaves. Sellers were sorting into two size categories. It seemed that size was more important than quality. Similarly, radishes were sorted as they were taken out of the truck into unbroken and broken/damaged piles. Sellers indicated that because of the poor socio-economic status of most Afghans, price was the market's primary concern. As one vender said, "Afghans are poor now and can't be too concerned with quality." Currently the market does not provide producers with incentives to produce higher quality. However, there are incentives to use processing, handling and storage technologies that would reduce spoilage while also increasing quality.

Nuts, dried beans, chickpeas, and limited dried fruit were available (in market across the road). Most of what was in the market was from Iran and Turkmenistan. Drought had limited production in Afghanistan. Venders also indicated that the better quality nuts and beans were imported.

The Kabul market appears to have simple, traditional marketing procedures in which kinship and extended family play an important part. There are few institutions to support import or export activities. Commercial credit is not available. Wholesalers grant short-term credit to retailers with whom they have had a business relationship, and sell for cash to others. Producers often use pre-harvest contracts to market their production because they do not have the resources to harvest and/or market their production.

Wholesalers sell both wholesale and retail—they sell in any quantity the buyer wants. No commercial credit is available in the market. The people I spoke to indicated that they extended credit to buyers that they had traditional relationships with and otherwise sold on a cash basis. Farmers set up stalls outside of the wholesale market in season and sell produce on a cash basis. Retailers come to the market. Individuals also buy to sell to retailers throughout the city.

Production in the Kabul region has been low in recent years due to war and 4 years of drought. Exporting would be difficult even with higher production, as few local institutions exist to support marketing functions. Sorting and grading, storage, packing, transportation, measurement standards, processing and cleaning facilities all limit the ability of the market

to produce a consistent quantity of quality product. On farm initiatives would need to be coordinated with down stream improvements to have an impact of quality. Likewise, the ability of Afghan producers to supply higher quality product to the domestic market would require dramatic improvements in all areas from production through the marketing channel to retail outlets. Higher value, quality products demanded in the Kabul market is now supplied by importers-nuts, some dried fruits, beans. As more quality is demanded in domestic markets, the Afghan supply chain will need to be improved for domestic producers to compete with imports.

Vendors indicated that consumers have strong preference for local eggs, nuts, and some fruits. Generally they do not differentiate quality/preference for vegetables. However, when it comes to purchasing consumers generally discriminate by price. Vendors indicated that price is the most importance factor for Afghan buyers

According to the wholesalers I spoke with, producers in the Kabul regional (Wardak, Logar, Kabul, Parwan, and Kapisa provinces) have generally produced enough vegetables to supply the Kabul market in season. This is so even in recent years when the on-going domestic conflict had much of the land out of production because the population declined dramatically and those still in the area do not have money to buy vegetables. Rapid population growth in Kabul is increasing food demand. As incomes go back up, the wholesales hypothesized that vegetables would still be needed from the Nangarhar region to meet local demand.

Vegetable production from the Kabul region is generally not shipped to other regions. The primary production areas are Parwan, Logar, Loghman, Nangarhar, Mydian and Wardak. Faculty of Agriculture personal suggested that consumption of a wide variety of vegetables was not a tradition in most of Afghanistan outside of Kabul and these traditional production areas. In the south, interior, and some northern areas people eat primarily onions, potatoes, okra, tomatoes, salad, and squash.

I spoke with a several wholesalers about intermediaries involved in the fruit, nut and vegetable markets. Generally, the people I spoke with were most active in vegetables. The market system they describe in Kabul was fairly simple. It seems that institutions in the vegetable market, as described, generally involved producers, pre-harvest contractors, and wholesalers. Some wholesalers I spoke with produced their own produce in the region north of Kabul and buy vegetables in Nangarhar on pre-harvest contracts to bring to the Kabul market. Some also purchased harvest crops from brokers and farmers.

Wholesale sugar, flour, cooking oil, and rice were sold adjacent to the vegetable/fruit market. Individuals in this market indicated that the food imports at times are also involved in exports, although limited production, road destruction, and security have greatly reduced exports. While the individuals in the wholesale market did not know many specifics, they suggested that the exports often would go to Pakistan for sorting and grading, procession, and packaging before being sold in Pakistan or re-exported. This is somewhat consistent with what Nasrat Akbarzad, the Faculty of Agriculture agricultural economist said about Kandahar area fruits and nuts exports being controlled by Afghans living in Pakistan. They

also suggested that several of the people involved in importing food stuffs (flour, oil, sugar, and rice) would be somewhat familiar with factors related to exporting.

In general, horticulture production is recovering slowly from the destruction of the war, the drought, and destruction of irrigation systems. In some regions, especially southern areas, orchards and vineyards have been uprooted for fuel because drought killed trees and vines.

While Afghanistan has a history of exporting vegetables, fruits, nuts, and dried fruits to Pakistan, India and the Arab Emirates, product quality has been and is a barrier to trading in these markets. Poor market channel management is a problem. Little sorting and grading of produce or other products takes place at the farm level. Packaging options are limited. Traditional post-harvest processing and storage technologies result in relatively low and uneven quality product, and high spoilage. Handling, poor transport conditions, and lack of storage facilities are other factors that also limit product quality. Lack of standard weights and measures across Afghanistan markets and between Afghan and foreign markets further disrupts trade. And, while production capacity has declined within Afghanistan, production capacity throughout the region has grown as have institutions to support producers' participation in export markets.

Wholesalers that I spoke with were very optimistic about current market conditions. The improving transportation and security infrastructure between Kabul and Nangarhar was making market access better. Kabul's growing population was increasing product demand. While wholesalers mentioned some problems, like not being allowed to drive trucks through Kabul during daylight because of traffic congestion issues, the people I spoke with were generally optimistic.

Retail markets

I visited retail areas in Darulaman/Karti-Seh, Frushica (by the river in downtown area), Jadi-Maiwand, Kote-Sangi, Micrion, and Shari-Nau. My intention was to observe the markets and to talk with retailers about product sources, market conditions, and consumer preferences. A wide variety of vegetables, fruits and dried fruits and nuts were available in all retail market areas. Potatoes, onions, garlic, eggplant, cabbage, tomatoes, cauliflower, turnips, leeks, radishes, spinach, green onions, mint, cucumbers, peas, okra, apples, oranges, tangerines, bananas, melons, and a wide variety of dried fruits and nuts were all available.

Retail vendors were generally of two types: open front shops and table carts. There were a variety of retail vendors in all markets. In some (Darulaman/Karti-Seh, Jadi-Maiwand) single product carts were most common with few actual stores. In others there was an even mix (Frushica, areas of Shari-Nau), and in others there primarily open front shops with few carts.

As food purchases are generally done through price negotiation it was not certain that I was getting actual price as it was clear to vendors that I was a foreigner and was not making any actual purchases. However, most retailers were very willing to talk about their businesses and gave prices that seemed consistent within and across markets. The price data I collected

(potatoes-7 afs/kilo, onions-6afs/kilo, cauliflower-15-25 afs/head, spinach-22afs/kilo, leeks-20afs/kilo, apples-20-25afs/kilo, oranges-40afs/kilo, lemon=40afs/kilo) were fairly consistent across Kabul markets. There were noticeable differences in markets, however. Markets in Shari-Nau had a much larger variety of vegetables, fruit and nuts, with larger quantities of more expensive produce like oranges, tangerines, green peppers, eggplant, and peas.

Retailers said consumers associated quality and location for fruit, dried fruit, and nuts. However, they said that consumers' preference was for low price rather than quality. Generally they do not differentiate quality/preference for vegetables. Shop keepers indicated that price is the most importance factor for Afghan buyers. Several retailers acknowledged that, generally, higher value products they currently sell are imported from Iran, Turkmenistan, Pakistan and elsewhere. They said Afghan producers produce for quantity not quality. They had little familiarity what specific supply chain technologies would need to be addressed for Afghan producers to provide a higher quality product to domestic markets.

Market conditions had been steadily improving in Kabul. A year ago there were few vegetable vendors as the city population was much lower and few people had money to buy food. As the population of Kabul has grown, the foreign community has grown, and people have started to rebuild the city, retailers say they have seen strong growth in sales. They are optimistic that the market will continue to expand. However, the ability of Afghan producers to supply domestic markets, independent of quality, is hampered by reliance on traditional production and marketing systems, drought, lack of processing, handling, packing and storage facilities, and an absence of institutions to support and regulate market activities.

Domestic Market Growth.

Population and income growth in Afghanistan will continue to stimulate increased demand for vegetables, fruits and nuts. Wholesalers and university faculty indicated that increased production will be required to meet growing demand. If the drought continues, food shortages will persist.

University faculty indicated opportunity to introduce the production of a wider variety of vegetables across the country. They recognized, however, the lack of a functional extension service or other institutions teach people how to grow and use vegetables limit the ability to introduce new products.

Export Market Growth.

The Kabul University faculty indicated that they thought there was potential for export growth. They, however, had little familiarity with foreign markets or changes in regional production in the past decade. Nasrat Akbarzad, an agricultural economist at the university had been involved in a study to identify export opportunity for fruit and nut exports from Kandahar in the mid 1990s. He indicted that the reliance on traditional production and marketing systems in the Kandahar area and the resulting poor product quality made

competing in export markets difficult, although there had been success in the 70s, especially with shipments to India. He indicated that Afghans living in Pakistan exported products to Pakistan that were then sorted, cleaned, and packaged for re-export. Poor transportation links make it difficult to ship to either India or Dubai. He said that Afghan traders face additional problems because of questions about their ability to deliver, Afghanistan's reputation for poor quality product, questions about Afghan traders' integrity, and a lack of institutions within Afghanistan to support export activity, such as handling, storage, processing, packaging, transportation, and credit.

All aspects of the Afghan supply chain need further development for Afghanistan food system to be able to meet growing domestic food demand. Dramatic improvements will be needed for Afghan producers to serve domestic markets demanding quality product. The food supply chain would benefit from interventions to improve production efficiency as well as all functions through the marketing chain. Improving standards will also better position Afghans to compete in regional international markets as domestic production capacity recovers from the destruction of the war years and the drought of the past 4 years.

Recommendations

1. Afghanistan is not self-sufficient in food. The initial focus should be on increasing production to meet growing domestic demand.
2. Production and marketing systems in Afghanistan are simple, traditional based systems. Given the attributes of the market, there has been limited emphasis on product quality. The marketing chain procedure and infrastructure—from producer to retailer—does not support quality. Systematic intervention along the marketing system is needed to improve both efficiency and quality.
3. Select villages in 6-7 provinces for demonstration activities. The initial activity could focus on new management technologies with existing plant material. The demonstration could focus introducing commercial fertilizer application, improved irrigation technology, and/or other management technologies that increase production. These interventions would increase production (and producer income) while waiting for the market to demand higher quality.
4. Collect retail/wholesale price data in markets that producers in demonstration villages market. Down stream information would help producers negotiate price and would provide market signals related to production mix. It would begin to empower producers by giving them information to aid in production and marketing decisions.
5. Work with the Ministry of Agriculture and NGOS to establish institutions to support the marketing system, such as sorting and grading procedures, storage, processing, credit, cross border customs facilities and so on.
6. The Ministry of Agriculture and Faculty of Agriculture research facilities were destroyed during the past 15 years of war. Cooperating with either to build their

capacity could help in establishing facilities for testing and propagating plant material to use in re-establishing fruit and nut production, and introducing new as well as improved vegetable varieties.

APPENDIX E

**A Preliminary Assessment Survey of
Horticultural Crop Production and
Marketing in Afghanistan**

By

**Nasir A. Saigy Ph.D.
Horticulturist**

January 15, 2003

A Preliminary Assessment Survey of Horticultural Crop Production and Marketing in Afghanistan

Preface

In view of more than two decades of war that broke institutional systems in Afghanistan, in addition to governmental bureaucracy, reliable data is hard to obtain in nearly all sectors of agriculture. Therefore, every study that is conducted in the current situation is forced to rely on limited sources that are available including few experienced personnel.

Thereupon, all information provided in this report are views of production and marketing parameters, illustrations from relevant governmental authorities, direct information from farmers, wholesalers, retailers, and also ideas and conclusions derived from the personal observations made during this short visit. Broader investigations and analysis are needed to fully describe the exact circumstances and realities of the situation taking into account the current on-farm and off-farm practices, management and their prevailed policies and shortcomings that are as a result of war, drought, and other factors. However, in the broad view for future planning and programming, the assembled primary information is fair and can be useful while used as a base for further studies.

Introduction

1. War

The devastating 20 years of war and political conflicts have severely damaged agriculture production, Afghanistan's basic source of income. Prior to the war, millions of workers were engaged in operations that either directly or indirectly gained from farms, factories, and the marketplace. Due to the war, the cultivated lands, factories and marketplaces have been destroyed. An example of this devastation can be seen in the Parwan province. At one time there had been five raisin processing and assembly plants in that region. Currently, there are no signs of raisin processing in Parwan or Kabul. The growth of raisins are now executed in traditional manners and at very low levels both quantitatively and qualitatively. At the present, only 7,000 to 8,000 hectares of vineyards are left behind from the pre-war estimate of 16,000 hectares of vineyards that were commercially operated in Shamaly*. In Kabul, the research and demonstration farms in Badam Bagh, Darrul Aman and the Faculty of Agriculture research farms have been destroyed or are in very poor condition. The adverse influences of war do not end here and will continue for perhaps several more years until full recovery is achieved by progression through well-planned actions by related and concerned authorities and institutions. Similar conclusions will arise about other productions and economic activities, which are also agriculturally oriented.

* Salang Mountains are the extension of the Hindu Kush Mountains from the northeast to the southwest region of Afghanistan. The Salang Mountain is the origin of the two river valleys; one extends into the north and the other into the south. Both extensions begin from narrow valleys and move to broad plains towards the north to Amu Darya (Oxus) that covers Qataghan Zamin (Baghlan, Kunduz, and Mazari Sharif) and to the south to the famed Shamaly Valley (Parwan, Kapisa and Panjshir). These valleys have fertile soil suitable for agriculture and adequate water irrigation, if managed properly.

2. Drought

Another huge obstacle to agricultural production, which is the primary source of living for the people of Afghanistan is the unique continuing drought that has caused severe decrease in agricultural production that have not been seen before by the present generation. Despite struggles carried out by the local people and international community to diminish its effects on vegetation and other facets of life in Afghanistan, the damage is so serious and that its effects will not end for another several years. The underground water level all over the country has fallen considerably and surface water for irrigation has diminished to half its capacity in northern areas and to very low degrees in southern and western parts of the country.

Many farmlands are currently not cultivated, where they were once double and triple cropped. The few farmlands that are cultivated have been reduced to mostly only single cropping. Large areas of orchards and natural valuable forests and grazing lands were dried and some native varieties (germ-plasm) may have been destroyed by drought. Cultivated crop production is said to be almost one-third to one-half of the pre-war levels in most areas.

3. Political and Institutional Constraints

Another factor that unavoidably arose into account with regard to the restoration of the agricultural production and probable socio-economic improvements/developments of concerned areas is the command of post-war tribal groups and the extent of political tensions.

It is obvious to almost everyone that disturbances in all aspects of Afghans' life including farming, ownership and control over resources and assets were associated with political changes that commenced from soviet intervention and the setup of a communist regime. The process continued during the Mujaheddin era and Taliban ruling. Residues of those imbalances imposed are still in place in most parts and vary in degree. Therefore, in any planning and programming aimed to rehabilitate and/or restore the agriculture sector, these factors have to be kept in consideration simultaneously.

There are different tribes, such as the Tajeks, Pushtuns, Uzbaks, Hazaras, and other minorities with different dominance, in almost all of the concerned provinces. Prior to the war, these tribes had been in good social standings with each other. However, after the recent war, these ethnic groups have become more distant from each other and more sensitive to the political advantages in visible degrees.

Current Situation and Prospective

Due to war, drought, politics and neglect, major changes in the types and outcomes of agricultural production has occurred. Some of them are very obvious, such as the growing of opium instead of cereal crops, or the growing of wheat instead of cotton and sugar beets. The productions of horticultural crops, as well as other sectors of agriculture, are much lower than before due to the absence of supporting agencies, inadequacies of input, supplies of improved seeds, water, fertilizer, pesticides, transportation, and the lack of research and extension services and other government intervention.

For the purpose of adapting to changing circumstances, farmers are constantly adjusting their pattern of production, but these adjustments are being performed more in the manner of traditional ways. This is because principally, even before the war, agriculture was dominated by traditional practices with specialization and modernization of outputs in some parts of the country. Traditional farming is obviously associated with the decline in farming incomes and lower level living standards for farmers. These changes can be interpreted as the transition from commercial farming to subsistence or nearly subsistence level farming, and the transformation of many on-farm skilled laborers to off-farm and non-farm wage laborers in big cities.

Therefore, changing of this course of action at this time is needed and will require interventions in the most rational and logical manner with appropriate acceleration.

Observation of Horticultural Crops and Marketing in Kabul

Due to the climatic conditions, fertile soils, water availability (past), high demand and easily accessible markets, Kabul was and still is, compared to other provinces, the main fruit and vegetable basket of Afghanistan. Fruits and vegetables comprise the main cash crop in Afghanistan, specifically in the populated provinces such as Kabul, Parwan, Nangrahar, Kandahar, Heart, Mazari Sharif, Kunduz, Baghlam, Parwan, Kapisa, Badakhshan, Maidan, Wordak and Helmand.

The main fruits grown in Kabul include, but are not limited to: grapes, apples, apricots, peaches, plums, pears, sour cherries, sweet cherries, mulberries, walnuts, figs, quince and Russian olives. Most of the fruits are marketed in Kabul markets and sent to other provinces in fresh or dried forms. Some of the products are even exported to Pakistan, India and other countries. Commercial vegetable crops grown in Kabul and the surrounding areas are: melon, watermelon, onion, potato, tomato, eggplant, cucumber, carrots, turnip, beans, spinach, squash, tarah (snake cucumber), hot pepper, bell pepper, leek, pumpkin, radish, turb (white radish), peas, table beet, garlic, coriander, cabbage, and etc. These vegetables, in addition to the Kabul market, are sent to nearby provinces in fresh, dehydrated and limited processed forms.

The available cultivated land in Kabul has been reduced to two-thirds, of what it once was, due to war, presence of mines and drought. In the meantime, the population of Kabul has

increased from 500,000 people prior to the war period to approximately 2.5 million people at the present. In order to feed so many people with the limited land available, the horticultural crop production must be increased to its maximum capacity per unit of land, with the introduction of improved and high yielding varieties, fertilizer and pesticides.

After discussing horticultural crop production, research farms and extension with the Department of Horticulture personnel in the Ministry of Agriculture, we traveled to Badam Bagh and Darul Aman research farms. Mr. Matiullah Mayar, a fruit specialist of the Badam Bagh research farm, accompanied us on our visit. Comparing Badam Bagh now to twenty-six years ago 80 to 90% of the orchards, nurseries and hot beds have been destroyed. There are not enough seedlings to be distributed to the farmers. In the Darul Aman research farm more than one thousand different varieties of wheat have been planted. As for horticultural crops, a few rows of stone fruits and pome fruits were planted which they did not know the name of the varieties. The condition of the research farm of the Faculty of Agriculture is even worse. The farm machinery were destroyed or taken away from the farms. They do not have an operational pump in order to pump water for irrigation from the well. Shortage of water is the biggest problem in government farms and private farms. Subsequently the yield and quality of the horticultural crops have been reduced. In certain areas due to severe drought and unavailability of underground water some farmers have lost their orchards and vineyards.

When we went to the private sector in Char-Deh, the farmers were busy in harvesting late fall crops such as turnip, spinach, leek, and turp (white winter radish). The farmer did not have even one pair of oxen. He was using one cow and a donkey to plow and prepare his land for early spring planting.

In the afternoon, we went to the produce wholesale market, which is located near Khair Khana. It is a big compound divided into small shops. Some of these shops carry only vegetables or fruits, others have mixed produce (fruits and vegetables). At this time, in the market, they had pomegranates from Tagaw, Nijrab and Tash Qurghan; apples from Wordak, Maidan and Logar; grapes from Shamaly; pears from Shakar Darah; citrus fruits from Pakistan; watermelon and melon from Kelagai, Kunduz, Mazari Sharif and Baghlan; potatoes from Bamyar, Wordak, Ghazni and Kabul, onions from Char Asia, Char Deh, Logar, Parwan and Jalalabad; cauliflower, cabbage, cilantro (coriander), spinach, radish, leek and green onion from Jalalabad; turnip from Kabul, Maidan and Jalalabad..

All the fruits and vegetables are brought to the wholesale market either by the farmers or the traders (Tekadar). Traders during the growing season of the fruits and vegetables go to the farmers in different areas and give them some cash money in advance. In this situation, the farmers sell their harvest at a much lower price than the market value to the traders. There are neither farmer cooperatives nor government credits available to the farmers.

Fertilizer and pesticides are available, but most farmers do not apply fertilizer or pesticides because of the high prices and lack of credit availability. The data for the prices of wholesale and retail of horticultural crops in Kabul are with Dr. McNamara.

Visit to Nangrahar Province

After Kabul, the city of Jalalabad in the Nangrahar Province is the second fruit and vegetables basket of Afghanistan. Jalalabad has almost a frost-free winter that is even suitable for growing sub-tropical crops. The Kabul River passes through Jalalabad and flows to the Indus River. The Kabul and Panjshir Rivers join together near the Surubi area and are collectively called the Kabul River. This river has sufficient water supply for the irrigation of not only the lands on both sides of the river, but also those located further away such as the Adah Farm, Shesham Bagh Farm, Summer Khail Farm, and other farms along its route if managed properly. The Canali-Nangrahar, which originates from the Darunta Dam that was built by the former Soviet Union in the early seventies, carries water to the above-mentioned farms. Due to war the efficiency of this canal has reduced to 50% of its former capacity. Jalalabad has very fertile soil ranging from clay loam to sandy loam that is very suitable for agriculture. Another factor that has added to Jalalabad's horticultural crop production is its relatively close proximity to the markets in Kabul and Peshawar, Pakistan, respectively 160 kilometers and 100 kilometers. When the road between Jalalabad and Kabul was completely asphalted, the cargo trucks could reach the Kabul markets in three to four hours, compared to the ten to twelve hours that it takes now. Most of the produce is sent to Kabul and Peshawar. Jalalabad is second only to Kabul in the number of fruits and vegetables that are grown. There is the possibility to introduce sub-tropical fruits to this area for commercial production such as bananas, guava, passion fruits, avocados, pineapples, mango and etc.

The main fruits of Jalalabad are citrus fruits, which include sweet oranges (malta), sour oranges (naring), limes (lemoo), grapefruit (katah), tangerine (suntara), sweet Persian lime (meta) that are grown in the lower elevations, and pomegranates, peaches, grapes, figs and mulberry that are grown in the higher elevations such as Khugyani, Waziri and Shinwar districts of Nangrahar.

All kinds of warm, mild and cold season vegetable crops are grown here. In most areas, they grow triple cropping per year. Almost all common vegetables such as tomato, eggplant, cucumber, carrot, hot pepper, bell pepper, okra, summer squash, pumpkins, sweet peas, snow peas, beans, string beans, potato, onion, cauliflower, cabbage, broccoli, Brussels sprouts, turnip, kohlrabi, radish, celery, cilantro (coriander), mint, green onion, spinach, Swiss chard, etc. Potatoes grown in Jalalabad in the fall are used for planting in the spring in Kabul, Bamyan, Maidan, Wordak and Parwan provinces.

Seeds, fertilizers, pesticides and some tools are imported from Pakistan and other neighboring countries. At the present, there are no rules to prohibit / restrict their entries to Afghanistan.

In order to assess the horticultural crop production availability and marketing in Jalalabad, I started visiting the Shesham Bagh Research station along with the ICARDA group. There were over one thousand varieties of wheat grown here for research and observation, but there were no nursery plots, except for a hot bed that was planted with citrus seed. There were very few noticeable horticultural crop research activities in this research station. This lack of interest may have been due to the lack of motivation that could be attributed to the

lack of money, improved seed, rootstocks, and/or professional personnel. After seeing the research farm, next visit was to the produce wholesale market.

Produce Wholesale Market

I was accompanied by Mr. Sardar Muhammad, a graduate from the faculty of Agriculture, Kabul University during the visits to the produce wholesale market, produce retail stores and to the chemical supply stores,

The produce wholesale market is located in the northwest part of Jalalabad. The road is not asphalted and is in poor condition. The condition of this road might cause the Produce to bruise badly, especially those packed in burlap sacks. The attitude of the buyers and wholesale traders was very friendly and hospitable in the market. The traders were divided into three categories: a) fruits only, b) vegetables only, c) mix of both fruits and vegetables.

Citrus fruits, Roma tomatoes, apples and bananas were packed in wooden crates and were sold as a whole crate. There is a 15-20% margin between the wholesalers and retail shops. Potatoes, onion, carrots and turnips were packed in 60 to 70 kilogram in burlap sacks. Cauliflower, cabbage, spinach and white radish were carried in bulk on the back of horse pulled carts (gadi) or in the back of trucks (larie) to the market.

The traders apply some kind of sorting and grading, but it is not near the international standard. Since neither the farmers nor the wholesalers possess any cold storage facility to prolong the availability of their produce, they have to sell their produce immediately after harvest locally or send it to other reachable markets, in Kabul or Peshawar.

Citrus fruits, tomato, okra, green beans and green peas were imported from Peshawar, while the rest of the vegetable crops were grown in Jalalabad.

Produce Retail Stores

The produce retail stores are mainly located in the southwest part of Jalalabad called Dar Wazaie Peshawary (Peshawar Door). Fruits and vegetables are found in abundance here. In most of the shops, the fruits and vegetables were fresh and clean except some on small carts. I understood that the municipal personnel are trying to eliminate or reduce the number of carts on the sidewalks and on the streets. The prices of fruits and vegetables in retail stores were as follows:

Price of Fruits and Vegetables in Retail Stores

Produce	Weight (kg)*	Price (Afs)**
Bell Pepper	1	25
Broccoli	1	15
Carrots	1	5
Cilantro (coriander)	1	4
Eggplant	1	10
Garlic	1	25
Hot Pepper	1	15
Lettuce	1	12
Leek	1	7
Mint	1	30
Onion	1	10
Potato	1	10
Red Radish	1	6
Spinach	1	4
Summer Squash	1	15
Tomato	1	10
Turnip	1	3
Cabbage	1 piece	8
Cauliflower	1 piece	7
Cucumber	1 piece	3
White Radish	1 piece	2
Golden D. Apple	1	30
Red D. Apple	1	25
Lemon	1	30
Oranges	1	8
Pear	1	15

*1 kg = 2.2046 lbs

** \$1.00 = 40 Afs

1 Hectare = 2.471 acres

1 Metric ton = 1,000 kg = 2,204.6 lbs

1 Hectare = Sq. meter

Fertilizer and Pesticide Retail Stores

Some farmers in Jalalabad are familiar with the application and use of fertilizers and pesticides. However, the farmers are not happy with the fertilizers and pesticides produced in Pakistan. They believe that the nutrient content stated on the fertilizer bags is not reliable. They prefer the di-ammonium phosphate and potassium nitrate from the United States and urea from Mazari Sharif Fertilizer Factory. The problem is that U.S. made fertilizers is not available in the market and urea production of Mazar-e-Sharif has been reduced to 50% or lower of its production capacity. The fertilizers that are available in the market are imported from Pakistan, Iran and Russia. Some of the fertilizers available in the markets were as follows:

Fertilizer	Nutrient Content (%)	Weight (kg)	Price/bag (Afs)*
Urea	46% N ₂	50	450
Ammonium Nitrate	22% N ₂	50	360
Super phosphate	20% P ₂ O ₅	50	300
Di-Ammonium Phosphate	46% P ₂ O ₅	50	825
Nitrophosphate	18% N ₂	50	600
	20% P ₂ O ₅		
	22% N ₂		

* \$1.00 = 40 Afs

The following pesticides were available, but I had little time to get the prices because the shops were closing:

Fungicides

A. Zineb

1. Dithane Z-78
2. Stauffer Zineb

B. Maneb

1. Manzate
2. Dithane M22
3. Black Leaf Manab

C. Ziram

1. Karbam White
2. Corozate
3. Orchard Brand Ziran

D. Captan

1. Orthocide 50W
2. Captan Garden Spray

Herbicides

- | | | |
|----|-----------|--------------------|
| A. | Poma | For Mono-Cotyledon |
| B. | Iralam | For Mono-Cotyledon |
| C. | 2,4 – D | for Di-Cotyledon |
| D. | Bectril M | for Di-Cotyledon |

Insecticides

- | | |
|----|--------------|
| A. | Malathion |
| B. | Diazinon |
| C. | M. Parathion |
| D. | Meta Mefopaz |

Conclusion

Off-farm activities, output preparation, harvesting, cleaning, grading, packaging, handling, storage, transportation and offers for sale of products and other marketing practices are all being performed in more traditional manners, rather than current and more efficient methods. A lack of communication facilities and market information about prices and market trends are affecting the present circumstances in the concerned areas, and standard weight measures are absent in many marketplaces. These factors all require step-by-step improvements.

It is obvious that the disarrangement in all aspects that occurred during the last two decades of war and conflict is large and multidimensional and will take years to rectify. However, this conclusion will not ignore the atmosphere that has been created for accelerated changes initiated by the international and national keenness for the recovery of this devastated nation.

Contribution in rehabilitation of the economic infrastructure, which is based on agriculture, will require side-by-side improvements in social facets of life by related national and international institutions. Otherwise, social factors will impede the speed of economic reform. Besides the vast devastation in infrastructure, mainly of irrigation systems, and the prevailed social disorder, other factors that have afflicted the agricultural production, which is the primary source of living for much of the present population, and the return of refugees are: poor production associated with the lack of suitable marketing, including improper supply and presentation to markets, non-accessibility to marketing channels, and the lack of due knowledge and procedures.

Capacity development and institutional rearrangement of local authorities through training will have a significant role in upgrading skills and long-term self-sustainability of those

APPENDIX F

Draft Report

Horticulture Market Survey Production Capacity University of California, Davis Horticulture Market Assessment Project Kevin T. McNamara Purdue University June 18-22, 2003

Afghan agriculture performance continues to be mixed. Limited data on aspects of input supplies, production systems and product marketing is systematically available. Discussions with university, ministry, NGO, donor country personnel as well as farmers provided a general overview of the state of the agricultural system in Afghanistan. While there are clearly successes in rehabilitation of agriculture production systems, the state of the country's production capacity appears weak. Data about the state of production systems, technologies, agriculture services, and product quantity and quality were collected from discussions with university faculty, Ministry of Agriculture personnel, NGO personnel, producers, retailers and wholesalers. Field visits trips to three regions north of Kabul also were made to observe production systems.

Producers tend to use traditional technology with unimproved or old plant material. While some producers appear open to adoption of new technologies—from plant material to production practices—producers generally have little education or capital. They tend to favor practices and varieties they know. Recent examples of NGOs distributing poor quality seed and varieties not appropriate for Afghan production regions re-enforce farmers' instinct to rely on tradition. Additionally, producers, retailers, wholesalers, and agricultural professions in general expressed a belief that Afghan varieties (such as pasticcios and almond) are superior in quality and taste than varieties grown in other markets. They believe that their varieties can compete favorable on domestic and world markets. It is an open question as to how Afghan products compete in regional and other markets with local varieties given market preferences. Yield and production cost data are also unavailable. Consequently, profitability of Afghan products or their cost effectiveness as compared to other plant material cannot be evaluated.

Precipitation, irrigation, seed, and fertilizer are among the factors constraining recovery. Agriculture services, particularly agriculture extension and credit facilities, have been very slow to recover. While there are clear examples of success with seed and fertilizer distribution, there also examples that adversely impact agriculture with poor/inappropriate seed and/or low quality fertilizer. There are examples of successful interventions to reconstruct and rehabilitate irrigation systems. There also are attempts to improve irrigation through locally innovative technologies that utilize water resources more efficiently that complement efforts to rehabilitation of canal, karez and other traditional systems. However, there was no systematically collected data related to re-habilitation of land and irrigation resources.

Data on recovery of fruit and nut production capacity is limited. Ministry of Agriculture staff indicated that data were being collected in cooperation with an FAO horticulture industry survey. University faculty suggested that much capacity had been destroyed by the Soviet forces in the 1980s, and more in the 1990s during the civil war and as a result of drought. In areas north of Kabul evidence of orchard destruction from Soviet occupation is still evident with scorched earth dotted with stumps of trees cut at ground level. Farmers pointed out other fields in wheat that had been orchard until the Soviets destroyed them.

The transportation infrastructure has an adverse influence on agriculture production. Secondary roads in the Kabul region are in poor repair. On the three secondary roads I traveled in the region north of Kabul, their quality deteriorated with its distance from the main highway. The main highway south of Kabul is still in disrepair, although efforts have begun to rebuild the road. University faculty, NGO staff, and others indicate that the main road to the north is in relatively good repair (there is currently a major re-habilitation effort in the Salang Pass area the limits travel through the pass to evening hours). However, they indicated that the secondary roads in the north, as in the south, are in a poor state of repair. The road system as well as the state of transport vehicles adversely impacts input supply as well as product market access.

Discussion of labor availability suggested concern for some areas. Areas of the country that experienced fighting and the destruction of housing have seen limited return migration of residents. While people are rebuilding rural housing in the areas relatively close to Kabul, there has been some difficulty supporting return migration to some rural areas due to security concerns, destruction of irrigation and housing infrastructure, and drought. Both University staff and NGO staff suggested some displaced rural people who have returned to the country have a strong preference for living in Kabul rather than returning to their home villages. They suggested rural labor shortages might result in some regions as the labor intensive agricultural systems recovers. They indicated, however, that southern regions tended to have much lower out-migration. These regions are still affected by drought, but should have adequate labor available once the drought eases.

Security and safety are concerns raised by several NGO employees. Recent attacks on aid workers in the south, efforts to disrupt Kabul-Kandahar road reconstruction, and the flurry of activity against the IFAS forces and Karzia government in Kabul have heightened security concerns for the international community, both regarding life in Kabul as well as travel outside of the capital. Discussion with Afghans about security for Afghans traveling and living throughout the country suggested some concerns, but the general consensus was that the country was safe and secure for Afghans except in areas with direct region conflict—that is some regional border areas where warlords were fighting to extend regional control. While de-mining is proceeding, the director of the Afghan de-mining program indicated that areas across the country still have active land mines as a result of extensive Soviet era and civil war mining. Live mines clearly impact land availability, but it was difficult to assess the extent to which mines limit utilization of arable land. The de-mining office has an aggressive plan for complete de-mining of the country. However, because level of mining that occurred across the country, de-mining will not be achieved for 8-10 years.

Afghan agriculture production technology tends to be traditional. Land holdings are generally small and farmers are labor intensive substance producers. In several regions, however, farmers utilize some land for horticulture crops that are sold to meet cash needs. Farmers tend to use traditional production practices for grain, vegetable, fruit, and nut production. While improved plant material has been utilized in the past, 25 years of isolation has adversely influence adoption of improved plant material in recent years. Several individuals mentioned that farm record keeping is very limited, both with regard to input costs, labor allocation, yield, and marketing price. Farmers, therefore, have no basis for making enterprise mix decisions to increase farm income. Additionally, it seems that the diagnostic skills of Afghans involved in extension type positions with the Ministry of Agriculture, NGOs or other organizations are very weak. Field agents have difficulty identifying plant problems as disease, pest, stress, etc. Consequently, plant problems receive no or improper treatment.

Marketing systems tend to be traditional. Often production is purchased in a pre-harvest contact by a consolidator or marketing agent, a jalab. Producers lack the resources to finance harvest and marketing. Many lack knowledge of market systems and prices. Consequently, little of the post-harvest value added is earned by producers. Given the current marketing practices, the value added is often earned by Pakistani merchant who buy product from Afghanistan. They sort, grade, and package the product for consumption in Pakistan or for re-export.

Recommendations

1. *The initial focus should be on increasing production to meet growing domestic demand.* Afghanistan is not self-sufficient in food. Efforts should focus on increasing production to meet domestic demand and to compete in regional markets.
2. *Systematic intervention along the marketing system is needed to improve efficiency and quality.* Production and marketing systems in Afghanistan are simple, traditional based systems. Given the attributes of the market, there has been limited emphasis on product quality. The marketing chain procedure and infrastructure—producer to customer—does not support quality.
3. *Demonstration activities for introduction of new technologies.* Afghan farmers could benefit from the introduction of improve plant materials, fertilizer use, new irrigation technologies, and enterprise management technologies. Establishment of *food production and marketing centers* would provide a focal point for technical assistance ranging from production technologies, to enterprise management, to marketing. Coordinated with university education programs and extension activities, such centers could be developed into institutions that would facilitate improved production in the short term well becoming institutions to provide a variety of technical support services—from improved production technology, to plant diagnostics, to management and marketing—in the longer term. Initial activity could focus on new management technologies with existing plant material. Demonstration could focus on introducing commercial fertilizer application, improved irrigation technology, and/or record keeping for managing farming

operations and making enterprise mix decisions. Such centers could increase production (and producer income) while helping producers build capacity to produce higher quality, for domestic, regional and other markets.

4. *Retail/wholesale price data education.* Down stream market information is generally not available to producers, especially as the distance between production areas and markets increases. Price information would help producers negotiate price and would provide market signals related to production mix. It would begin to empower producers by giving them information to aid in production and marketing decisions. Local producer organizations could be developed to assist producers. This function could be conducted in conjunction with establishment of *food production and marketing centers* (item 3) or independently.
5. *Extension/outreach Education.* The general knowledge and skill base of individuals involved in agricultural extension and outreach activities is lacking. Extension personnel lack the skills and confidence to effectively diagnose plant problems in the field, and back up resources for consultation or support are non-existent. A coordinated effort to develop in service training capacity for individuals involved in agricultural outreach (extension, NGOs, other) is needed. This effort should be coordinated with the Faculty of Agriculture at Kabul University to build the long-term institutional capacity for agriculture sector training.
6. *Applied Research.* Afghanistan needs to develop research capability to support agriculture. Re-developing research farm facilities at Kabul University would initiate this process. The facilities could be used to test, adapt, develop, etc, technologies for application to Afghan production systems. It also would be a gateway to integration of applied education to university agriculture education.
7. *Marketing Systems.* Work with the Ministry of Agriculture and NGOs to establish institutions to support the marketing system, such as sorting and grading procedures, storage, processing, credit, cross border customs facilities and so on. There are currently examples of efforts in Kandahar to organize and coordinate post harvest activities in dried fruits and nuts for export. Similar efforts should be explored for other regions, focusing on dominant horticultural crops produced in the area.
8. *Post Harvest Process/Value Added Center.* While some drying takes place, especially with fruits, Afghanistan has limited processing capacity for fruits and vegetables. Establishment of a center for developing and adapting processing technologies for locally produced food products would support development of the food system to provide increased producer income as well as develop domestic industries to begin to compete with imported processed goods. Such an institution could be established as a unit within the Faculty of Agriculture at the University to draw on university resources and provide a training lab for students interested in the food industry. Alternatively, it could be established as institution coordinating activities with regional *production and marketing centers* (item 3).

institutions. These activities, if well performed, will produce a reasonable rise in the quantity and quality of agricultural products in the near future.

Ultimately, if farmers are being persuaded to raise their production, in addition to the restoration of their irrigation systems that are needed, equal attention must be paid to the fact that their current outputs must be marketed at rewarding prices. Therefore, improvement of the small farmer sector requires the development of market-oriented productions, and logical direction of produce flow into proper outlets through on-farm and off-farm extension services and farmer cooperatives.

Recommendations

1. Immediate supply of improved vegetable seed for the Ministry of Agriculture, Faculty of Agriculture research farms and some farmers.
2. Provide small tools such as shovels, spades, forks, wheelbarrows, and picks also pruning, budding and grafting tools (knife, rubber bands, wax, clippers, anvil pruning shears, lopping shears and pruning saw), etc.
3. Provide a supply of one or two year old fruit seedlings for demonstration plots in the research farms and distribution to the farmers.
4. Provide some fertilizer to be distributed with seed for initial planting to all concerned parties.
5. Provide training for research and extension agents in the Ministry of Agriculture and Faculty of Agriculture.
6. Build some hot beds for the Ministry and Faculty of Agriculture research farms.
7. Have a pathologist to collect and identify diseased samples from fruit trees and vegetables during the dormant and growing season.
8. If the budget allows, dig deep wells and provide water pumps in the research farms of Badam Bagh and the Faculty of Agriculture in order to eliminate water shortage in those areas.
9. It would be beneficial if some Rodenticide and Predacide were distributed to all three sectors mentioned above.