MARKET SECTOR ASSESSMENT IN HORTICULTURE - Presentation

PHASE 2-3
Feasibility studies and Business plans

A STUDY FOR MINISTRY OF COMMERCE AND UNDP
August 2004

IFHope, Jalalabad
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Project presentation

Phase 1: Market research

Phase 2: Field feasibility study

Phase 3: Implementation / business plans

Phase 4: Road-show

IMPLEMENTATION
Following our review of market opportunities, logistics and conditions of production (see Phase 1 - Presentation and Report), the aim of today’s presentation is to:

- Present business opportunities in the horticultural sector
- Assess their relevance using tools like business plans, revenue forecasts and data from preliminary feasibility studies
- Provide entrepreneurs with a « roadmap » to launch businesses in this market sector

The business plans and revenue forecasts should be taken as examples and not for granted:

- They are “theoretical” tools that allow assessment of a business opportunity according to a list of assumptions and hypotheses
- They of course will need to be fine tuned and adapted to the conditions of implementation
- It is anticipated that the opportunities can be more profitable than shown in the report as conservative figures were used to develop business plans
## Feasibility study and business plans

### Short-list of Opportunities – Module 1

| GLOBAL MARKET | Dried Fruits and Nuts | 1. Raisins and apricot processing and packaging  
2. Fair trade and Organic |
|---------------|-----------------------|-------------------------------------------------|
| REGIONAL AND LOCAL | Fresh Products | 3. Commercial horticulture crops for stone fruits, pomegranate, blood orange, persimmon, walnuts  
4. Storage facilities for temperate fruits and vegetables (apple, grape, tomato)  
5. Plastic tunnels to extend availability of vegetable (tomato, cucumber, okra ...) |
| | Processed Products | 6. Processing plants for fruits juices, fruits concentrates, tomato sauce and potato chips  
7. Commercial horticulture crops for processed products (juices, ...) |
| | Marketing Improvement | 8. Plastic/carton plant for production of boxes for fruits packaging  
9. Consolidation of the retail sector (through the establishment of super markets) |
Project presentation

Objectives

Promote horticulture development through business opportunities for the private sector

Opportunities

PRODUCTION
- Commercial Crops

PROCESSING
- Raisins
- Fruit juices

MARKETING IMPROVEMENT / NEW MARKETS
- Wholesale market
- Packaging
- Storage/Cold Storage
- Quality driven local market
- Organic / Fair trade
The data in this presentation comes from analysis of existing documentation and more than 400 interviews of professionals in Afghanistan and abroad.

<table>
<thead>
<tr>
<th>COMMERCIAL CROPS</th>
<th>RAISINS</th>
<th>EQUIPMENT MANUFACTURERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Research Institute, Peshawar, Pakistan</td>
<td>AEGEAN Exporter’s Association, Izmir, Turkey</td>
<td>I.P FARAYAND, food processing lines manufacturer, Tehran, Iran</td>
</tr>
<tr>
<td>Agriculture university, Tehran, Iran</td>
<td>NIMEKS (dried fruits), Izmir Turkey</td>
<td>CONAIR, cold storage machineries manufacturer, Lahore, Pakistan</td>
</tr>
<tr>
<td>Field investigation in more than 10 production areas in Iran: Tehran, Qazvin,</td>
<td>Izmir Mercantile Exchange, Izmir Turkey</td>
<td>MOMTAZAN Ltd., Pistachio Processing line manufacturer, Kerman</td>
</tr>
<tr>
<td>Soveh, Urmiah, Tabriz, Hamadan, Toyserghan, Meshad, Kashmar, Kerman/Rafsanjan</td>
<td>IRAN SAMBOL Ltd., Raisin factory, Malayar, Iran</td>
<td>BIGTEM, raisin processing lines, Istanbul, Turkey</td>
</tr>
<tr>
<td>IPRI, International pistachio research institute, Rafsanjan, Iran</td>
<td>TORSHIZ RAISIN Ltd., Raisin factory, Kashmar, Iran</td>
<td></td>
</tr>
<tr>
<td>Iranian Pistachio Union, Rafsanjan, Iran</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chamber commerce of Kerman, Kerman, Iran</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MERSUSCOM Ltd, Plastic tunnels, Tehran, Iran</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRANDRIP Ltd., Drip Irrigation, Tehran, Iran</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GARDUNEH Abi Saz Ltd., Drip Irrigation, Tehran</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Introduction

## Research and data gathering

### MARKETING IMPROVEMENTS

- **SERENA HOTEL**, Kabul
- **SERVALL**, catering services, Kabul
- Various restaurants in Kabul
- **TOWID CARTON Ltd.**, Carton, boxes, Tehran
- **ZARPLAST Ltd.**, Plastic industry, Tehran
- **SGS**, Certification, Tehran
- **Moody International**, Certification, Lahore

### FRUIT JUICES

- **SHEZAN**, fruit juices /concentrates manufacturer, Lahore, Pakistan
- **TETRA PAK**, packaging manufacturer, Lahore, Pakistan
- **SHAHD SAHAND**, fruit juices /concentrates manufacturer, Tabriz, Iran
- **SHAHDIRAN**, fruit juices /concentrates manufacturer, Meshed, Iran
- **SAROUNEH**, fruit juices /concentrates manufacturer, Urmiah, Iran
- **IRANSHAHR**, fruit juices /concentrates manufacturer, Soveh, Iran
- **ALIFARD**, fruit juices /concentrates manufacturer, Soveh, Iran
- **NAHRIRAN**, pomegranate concentrates, Soveh, Iran
- **ABNIC**, water treatment, Tehran, Iran
- **DIMES**, fruit juices manufacturer, Izmir, Turkey
- **Kukre**, processed fruits manufacturer, Eskishir, Turkey
- **Pasifik**, import/export of agro products, Istanbul, Turkey
Contents of presentation

PRODUCTION OPPORTUNITIES

• Commercial Crops

PROCESSING OPPORTUNITIES

MARKETING OPPORTUNITIES
Commercial crops
Opportunity rationale - Production

Promoting intensive commercial crops is a strategy focusing on private producers to increase horticulture production and quality in Afghanistan

- The main bottleneck in the horticulture sector development in Afghanistan is at the production level (see Module 1)
- Current production level is low as compared to neighboring producing countries (see data annexes Module 1)
- Quality is a serious issue for export of Afghan horticulture products
- Experiences from advanced neighboring countries, particularly Iran and Turkey, can be applied in Afghanistan
- Climate suitable for high quality fruits and vegetables
- ~600,000 Afghan farmers/producers are cultivating horticulture crops*

Through the promotion of commercial/intensive crops, we can:
- Increase volume, quality and uniformity of products for national, regional and international markets
- Increase productivity and reduce financial production cost

www.fao.org/world/afghanistan
### Commercial crops

**Opportunity rationale - Markets**

| Demand for Afghan horticulture products is growing and it is driven by increased population in the past 25 years in the region (Afghanistan, Pakistan and India) and 20% GDP increase in 2003 |
| New markets are opening (market opportunities in Middle East markets, trade agreement with India and Iran, etc..) |
| Good markets in India and Pakistan exist for temperate fruits (grape, apple, apricot, nectarine, peach, plum, almond) |
| Some horticulture crops have an important international export potential (pistachio, walnuts) |
| Future development of food processing industry will require higher volume of second grade horticulture products (juices, etc..) that can be produced by commercial crops |

No major difficulties foreseen to market selected good quality horticulture products from Afghanistan
### Commercial crops

**Rationales – Comparative Advantages**

Afghanistan benefits from an excellent climate, good varieties, low production costs and proximity to important markets

<table>
<thead>
<tr>
<th>Comparative Advantages of Afghanistan</th>
<th>Limitations of Afghanistan</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Excellent climate and good varieties for temperate fruits production</td>
<td>▪ Low productivity of existing orchards system</td>
</tr>
<tr>
<td>▪ Proximity of large markets such as India, Pakistan, Middle East</td>
<td>▪ Low labor cost</td>
</tr>
<tr>
<td>▪ Afghan fruits are praised in India and Middle East</td>
<td>▪ Lack of know-how for intensive farming</td>
</tr>
<tr>
<td>▪ Preferential trade agreement with India</td>
<td>▪ No or poor pest management</td>
</tr>
<tr>
<td>▪ Good surface water availability in Afghanistan (2,480 m³/head/year) as compared to Central Asian republic and Iran (1,430 m³/head/year)* - this translates into lower irrigation cost as compared to Iran</td>
<td>▪ Lack of uniformity of varieties</td>
</tr>
<tr>
<td>▪ Low labor cost</td>
<td>▪ High quality seedlings no available</td>
</tr>
<tr>
<td></td>
<td>▪ Absence of sorting/grading and poor packaging</td>
</tr>
<tr>
<td></td>
<td>▪ Road network in poor conditions as compared to neighboring countries</td>
</tr>
<tr>
<td></td>
<td>▪ Absence of basic infrastructures in wholesale market</td>
</tr>
</tbody>
</table>


FAO, UNDP, SDC, AREU, 2004
Establishment of commercial fruit trees implies the existence of performing nurseries and the adoption of improved cultivation practices.

- Excellent quality seedlings available is key to the success of commercial crops.
- Subsidized price for high quality seedlings is necessary to promote commercial crops.
- Continuous market research on all fruits growing in Afghanistan is required in order to guide species and variety selection for seedlings production.

- Definition of adapted orchards system, technical support to producers and adoption of improved cultivation practices by producers are key to the success of commercial crops.
Commercial crops
Fruit Trees Nurseries

Establishment of commercial fruit orchards require the existence of professional nurseries producing high quality seedlings

Poor Status of existing Nursery Network

- Existing fruit trees seedlings production capacity is not adapted to intensive commercial crops
- FAO has identified 11 nucleus fruit nurseries and more than 70 private nurseries*
- However, inefficient crop management and lack of skilled technicians result in poor seedlings/trees quality produced – inappropriate quality for commercial orchards (but good potential for indigenous species conservation)

Creation of New Nurseries required

- IFHope in Jalalabad is producing 2 millions high quality seedlings per year (on MAAH land) and make them available at free cost to producers
- IFHope model could be replicated in other regions (Kandahar, Herat, Mazar-e Sharif, Kunduz) to promote orchards establishment
- As much as feasible local varieties could be multiplied (pomegranate, grape, apricot, walnut, almond, pistachio)
- Imports of varieties and root-stock from abroad may be needed for some species (nectarine, peaches, apple, pistachio)

## Commercial crops

### Rationale Business Plan Development

Business plans have been developed based on orchard systems and farming practices in Iran and adapted for Afghanistan conditions

- Orchard systems developed for economic modeling are based on intensive commercial orchards visited in Iran.
- Therefore, the business plans developed are theoretical and express what it would be possible to do in Afghanistan (based on experiences in the closest social and agro-economic conditions).
- No intercropping with vegetables or staple crops.
- **ALFALFA** are planted the first year to cover all the soil surface in order to reduce dust and provide limited amount of nitrogen.

- Alfalfa annual gross income has been estimated between US$ 60 to 120 per hectare. Current high prices of alfalfa in Mazar-e Sharif suggest that gross income could reach up to US $1,500/ha in that region.
- Annual land rent: US$ 250 per hectare.
- Labor cost at average market price: US$ 2.4 /day.
- Climatic hazard integrated in the model: 1 year damaging 70% of the crop at full production period over 15 years.
- It is assumed that high quality seedlings are (or will be) available at subsidized price (such as IF Hope nurseries in Jalalabad).

*Source: H. Maletta, “The cost of wheat production in Afghanistan in a farming system perspective”, FAO, 2003*
## Commercial crops

Opportunity rationale - Markets

Intensive commercial orchards increase yield and gross income. Important leverage potential on economic growth in rural areas.

**Based on field visits and earlier FAO horticulture reports (1996)**

Conservative estimates based on well managed orchards visited in Iran

<table>
<thead>
<tr>
<th>Crops</th>
<th>Estimated Yield mt/ha Traditional Orchards*</th>
<th>Farm Gate Price</th>
<th>Gross Income</th>
<th>Estimated Yield mt/ha Commercial Orchards</th>
<th>Estimated Farm Gate Price**</th>
<th>Gross Income</th>
<th>% Gross income increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>WALNUT</td>
<td>350</td>
<td>0.6</td>
<td>210</td>
<td>1,700</td>
<td>0.55</td>
<td>935</td>
<td>345</td>
</tr>
<tr>
<td>GRAPE</td>
<td>8,500</td>
<td>0.28</td>
<td>2,380</td>
<td>25,000</td>
<td>0.24</td>
<td>6,000</td>
<td>152</td>
</tr>
<tr>
<td>PEACH</td>
<td>7,000</td>
<td>0.34</td>
<td>2,380</td>
<td>20,000***</td>
<td>0.28</td>
<td>5,600</td>
<td>135</td>
</tr>
<tr>
<td>APPLE</td>
<td>10,000</td>
<td>0.2</td>
<td>2,000</td>
<td>22,000</td>
<td>0.2</td>
<td>4,400</td>
<td>120</td>
</tr>
<tr>
<td>ALMOND</td>
<td>1,400</td>
<td>2.2</td>
<td>3,080</td>
<td>2,100</td>
<td>2</td>
<td>4,200</td>
<td>36</td>
</tr>
<tr>
<td>APRICOT</td>
<td>8,500</td>
<td>0.36</td>
<td>3,060</td>
<td>12,000</td>
<td>0.32</td>
<td>3,840</td>
<td>25</td>
</tr>
<tr>
<td>PISTACHIO</td>
<td></td>
<td></td>
<td>1,450</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Example:** 50,000 hectares of commercial orchards (30% pistachio, 20% almond, 20% grapes, 10% walnut, 10% apricot, 10% apple) generate a revenue of more than 200 million US$ for the country.

*Based on FAO estimates in 1996 and 2000 and field observations/discussion with Afghan producers

**Estimated Farm gate price lower than current prices as it is anticipated that installation of intensive orchards will result in price decrease

***Peak yield in years 4 and 5
Afghanistan is the center of origin of pistachio «Pista vera»... but pistachio is not cultivated
Commercial crops
Pistachio – World Market

Increased world demand for pistachio
According to Rafsanjan traders the market is there

- World imports of pistachio increased significantly since the 1980s:
  - 830% between 1980 and 1990
  - 70% between 1990s and 2000
  - 12% annual increase in 2000-03

- Important annual variation exists within each decade due to concentration of production in Kerman area

**IMPORTS**
- 116 countries are importing ~200,000 Mt of pistachios
- Top 10 importer countries represent 72% of all imports: China-Hongkong (18%), Germany (11%), Spain (8%), Italy, China, France, Luxembourg (6%), Mexico (5%), Lebanon (4%) and Saudi Arabia (3%)

**EXPORTS**
- Top 10 countries export 96% of world pistachio and Iran alone 66%
- 5 of the top 10 exporter countries are non pistachio producers (trans-shippers)

Commercial crops
Pistachio - Surface Harvested

62% of the pistachio harvested acreage in the world is located in Kerman province and the acreage largely increased in the past 30 years.

Area harvested in Iran increased significantly since the 1970s:
• 220% between 1970 and 1980;
• 38% between the 1980 and 1990 and
• 78% between the 1990 and 2000

Area harvested in the world:
• annual increase of 3.5% in 2000-03

Although Iran is the largest world producer of pistachio, it has the lowest yield amongst producing countries. According to Rafsanjan Pistachio Research Institute, in the past 6 years, the yield of pistachio in Rafsanjan has decreased by 24%; from 1.36 MT/ha to 1.03 MT/ha.

- The cause of the low pistachio yield in Iran and particularly in Kerman region (1.03 Mt/ha) are structural and it is unlikely that this can be redressed in the near future.

- Yield level in Khorassan province in North-eastern Iran is about double than Kerman with nearly 2 Mt/ha on average.

Commercial crops
Pistachio – Productivity Crisis

Kerman/Rafsanjan faces severe structural problems in cultivating pistachio and Kerman/Rafsanjan may lose its world leading position in the mid-term (10-15 years)

- Sub-optimal water availability for irrigation - Water shortage increases early splitting of pistachios which then develop a high ALFATOXINE content
- Severe salinity and micro-nutrient deficiencies problems
- Approximately 1 meter of annual decreased of water table in Rafsanjan (located between 55 to 200 meters). The average duration of deep wells is 5 years
- Root fungus (*Phytophthora spp*) affecting entire rows of traditional orchards systems in which pistachio trees are planted every 0.7-1 meter
- Most of the orchards have 20 to 60% of trees missing and the life span of the orchards is reduced to 30 years (instead of more than 100 years for well managed orchards)
- The climatic conditions in Kerman and Rafsanjan are not ideal for pistachio production as it is far South from the natural production area which is Northern Afghanistan. High heat in spring affects pollination at blooming time and reduces yield potential
- In Kerman/Rafsanjan, pistachio is mono-cropped over 250,000 ha in production, which favor the spread of pests and diseases
Aerial view of pistachio trees in Rafsanjan shows a significant number of missing trees due to salinity and soil fungus problems.

Rafsanjan, 25 July 2004
Salinity symptoms on pistachio orchard in Rafsanjan
Commercial crops
Pistachio – Productivity Crisis

Root fungus diseases (*Phytophtora spp*) on pistachio. When affected trees are not carefully removed the complete line of trees can be affected (trees planted too close)

Rafsanjan, 26 July 2004
Commercial crops
Pistachio – Productivity Crisis

Kerman pistachio in severe crisis, world demand increasing faster than production
= Excellent opportunity for investment in pistachio in Afghanistan

Yield Evolution in Kerman Province

<table>
<thead>
<tr>
<th>Year</th>
<th>Yield (Mt/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid 1990s</td>
<td>1.36</td>
</tr>
<tr>
<td>Early 2000</td>
<td>1.03</td>
</tr>
<tr>
<td>In 10-15 years</td>
<td>?</td>
</tr>
</tbody>
</table>

Private Sector in Kerman

Strong interest in diversifying production areas to other regions in Iran = Procurement of estates for pistachio orchards installation
Interest in prospecting partnership possibilities with Afghan private sector

Comparative advantages of Afghanistan

- Ideal climate for pistachio production
- Good surface water availability: in most regions, pistachio orchards can be installed using surface water (instead of costly deep wells irrigation which is the practice in Iran)
- Low labor cost
- Experienced labor: in Kerman an estimated 90% of pistachio farm laborers are Afghans

Source: yield figures; Rafsanjan Pistachio Institute

« Pistachio could be a very good business for Afghanistan, .... If Afghanistan can start producing, there is no worry about selling the products, the market is there! », Navid Moaven, Director Pistachio producers union
## Commercial crops
### Pistachio - Marketing Strategy

**Iranian varieties have a known world market while the global market for Afghan varieties is to be developed by promoting an “Afghan brand”**

<table>
<thead>
<tr>
<th>Iranian Varieties</th>
<th>Afghan Varieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>World market size is known</td>
<td>Unknown total/potential market size</td>
</tr>
<tr>
<td>Market is large and growing - current exports are estimated at 200,000 MT</td>
<td>Mainly Indian market - current exports are estimated at ~5,000 MT annually (of various quality)</td>
</tr>
</tbody>
</table>

- Market is secured
- Varieties and cultivation practices are well known thanks to many years of research in Iran
- Afghan varieties have a smaller size but are reputed to have a better taste and are highly appreciated in India. Therefore, their market price is higher
- An « Afghan Brand » can be developed from the Afghan varieties and world market should be prospected
- Limited experience on commercial cultivation of Afghan pistachio
- Agro-economic Potential of pistachio collection in Qala-e Naw and in Guzara nursery in Herat should be evaluated
## Commercial crops
### Pistachio - Variety Choice

**Proposed objectives for pistachio plantation:** at least 20,000 hectares in 5 years – Maximum of 2,000 hectares for each selected province

<table>
<thead>
<tr>
<th>Iranian Varieties</th>
<th>Afghan Varieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed that a majority of plantations (16,000 to 18,000 ha) in the first years with Iranian varieties (market security)</td>
<td>Proposed that 10-20% of plantations (2,000 to 4,000 ha) in the first years with Afghan selected varieties</td>
</tr>
<tr>
<td>Plantation in irrigated low land using surface water irrigation (Kandahar, Qalat, Nimroz, Farah, Herat, Faryab, Jawzjan, Saripul, Balkh, Kunduz, Takhar) – max. 2,000 ha/province</td>
<td>Plantation in irrigated low land using surface water irrigation (Kandahar, Qalat, Nimroz, Farah, Herat, Faryab, Jawzjan, Saripul, Balkh, Kunduz, Takhar)</td>
</tr>
<tr>
<td>The Rafsanjan pistachio institute can recommend pistachio varieties and orchards systems adapted to various agro-ecological locations</td>
<td>Plantation on the original Loess hills pistachio forest areas of Northern Afghanistan where water availability is good (Badakhshan, Takhar, Faryab, Badghis)</td>
</tr>
<tr>
<td></td>
<td>Opportunity for drip irrigation using Ser Hawz dam in Faryab province (Pashtun Kot district) should be prospected</td>
</tr>
</tbody>
</table>
Commercial crops
Pistachio - Variety Collection in Rafsanjan

The variety collection at the Rafsanjan pistachio institute provides a model for commercial pistachio orchard system.

Rafsanjan, 26 July 2004
Commercial crops
Pistachio – Processing/Packaging

Pistachio should be processed and dried just after harvest.
Packaging and export of dried pistachio take place throughout the year.

<table>
<thead>
<tr>
<th>Pistachio Processing Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removing skin</td>
</tr>
<tr>
<td>Washing in water</td>
</tr>
<tr>
<td>Size sorting and cleaning</td>
</tr>
<tr>
<td>Drying</td>
</tr>
<tr>
<td>Storage</td>
</tr>
</tbody>
</table>

- Harvested pistachio have to be dried to a humidity level below 6% after harvesting in order to avoid aflatoxine development.
- Processing line works on average for 20 days/year.
- Cost for a processing line machinery (capacity of 250 mt/day) = 60,000 US$.
- 1 machine for 5000 Mt/year or for approximately ~3400 ha (every 2 provinces).

<table>
<thead>
<tr>
<th>Pistachio Packaging Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory test</td>
</tr>
<tr>
<td>Packaging</td>
</tr>
<tr>
<td>Export dried pistachio</td>
</tr>
</tbody>
</table>

- Cost packaging line is generally low but it depends on the targeted market – Europe requires vacuum packaging system.
- Packaging line works year round.
Commercial crops
Pistachio – Processing

- Capacity between 1-5 Mt/hour per processing line
- Development of color sorting machine which may help in controlling aflatoxine
- All machines are available in Iran at competitive price
Commercial crops
Pistachio - Rationale business plan

- Expected farm gate price Iranian varieties: US$ 2.86 /kg (current price in Iran: US$ 3.45 /kg due to low harvest expected in 2004)
- Expected farm gate price Afghan varieties: US$ 5.0 /kg (current price: US$ 5.5 /kg)
- Distance plantation: 4 x 4 meters (625 trees/ha)
- After 25 years, one row is removed and the final planting distances are 4 x 8 m (about 300 trees/ha)
- Business plan includes processing (sorting, drying and storage) cost

<table>
<thead>
<tr>
<th>Pistachio - Iranian Varieties</th>
<th>Pistachio - Afghan Varieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>YIELD</td>
<td>Year 1-6</td>
</tr>
<tr>
<td>Mt/Ha</td>
<td>0</td>
</tr>
</tbody>
</table>

- Pistachio trees have 7 years juvenility and require 10 years to reach their production potential
- Well maintained pistachio orchards produce for more than 50 years
### Financial Analysis

#### Investment Returns
- **Investment cost for orchard installment**: 822 US $ per hectare
- **Total cost of 6 unproductive years**: 3,590 US $ per hectare
- **Iranian pistachio varieties Gross Income** as from year 10 is US$ 4,230 per hectare
- **Cost of Production** as from year 10 is ~1,120 US $ per hectare
- **21% Investment Return over a 15 years period**

#### Financial Summary

<table>
<thead>
<tr>
<th>Year</th>
<th>Investment</th>
<th>Operating Cost</th>
<th>Labor cost</th>
<th>Gross Income</th>
<th>Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>809</td>
<td>540</td>
<td>209</td>
<td>0</td>
<td>-1349</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>416</td>
<td>126</td>
<td>80</td>
<td>-349</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>587</td>
<td>137</td>
<td>100</td>
<td>-487</td>
</tr>
<tr>
<td>4</td>
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Commercial crops
Pistachio - Business plan

Afghan Pistachio varieties: High quality product, Good Gross Income and profit but it takes 10 years to reach full production potential - High demand in India

- Investment cost for orchard installment is 822 US $ per hectare
- Total cost of 6 unproductive years: 3,590 US $ per hectare
- Afghan pistachio varieties Gross Income as from year 10 is US$ 4,080 per hectare
- Cost of Production as from year 10 is ~1,010 US $ per hectare
- 23% Investment Return over a 15 years period

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<td>3011</td>
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</tbody>
</table>

Badghis, 22 May 2003
Commercial crops
Pistachio – Implementation Challenges

Cultivation of Pistachio could be a big business for Afghanistan, yet the implementation is challenging:

- Pistachio cultivation has to start from scratch in Afghanistan and technical support is required from foreign countries (i.e. Iran)
- The acreage of cultivated pistachio should reach a minimum scale in order for Afghanistan to have a say in the pistachio market – according to traders met in Rafsanjan, a total of 20,000 hectares would be a reasonable target to start with
- Pistachio orchards require 10 years to reach their full production potential
- For international exports, the processing industry has to come in when production starts
Commercial crops
Almond – World Market

Neighboring India is the largest importer of almond in the world. Yet, Afghanistan almond production and orchards productivity is low.

World Almond production 2003: 1.67 Million MT

- United States of America: 50%
- Spain: 13%
- Syria: 9%
- Turkey: 3%
- Libya: 2%
- Morocco: 5%
- Algeria: 2%
- Italy: 6%
- Iran: 7%

World Almond imports: 62,000 MT

- India: 35%
- China: 18%
- Pakistan: 16%
- Lebanon: 8%
- France: 3%
- UAE Emirates: 3%
- Spain: 6%
- United States of America: 50%
- China: 7%
- Turkey: 3%
- Algeria: 2%
- Iran: 7%
- Morocco: 5%
- Libya: 2%
- Syria: 9%
- Italy: 6%

<table>
<thead>
<tr>
<th>Almond</th>
<th>Yield (Mt/Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States of America</td>
<td>3.46</td>
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<tr>
<td>Pakistan</td>
<td>2.47</td>
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<tr>
<td>China</td>
<td>2.20</td>
</tr>
<tr>
<td>Turkey</td>
<td>2.11</td>
</tr>
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<td>Afghanistan</td>
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</tr>
<tr>
<td>Iran</td>
<td>0.91</td>
</tr>
<tr>
<td>Turk-Uzb-Taj</td>
<td>0.67</td>
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</table>

Main almond producer is the US with about 50% of world production.
Main almond importer is India with about 35% of world import.
Afghan Almond are mainly exported to India via Pakistan (10-12,000 Mt exports per year).
Commercial orchards can increase productivity and competitiveness of Afghan almonds.

Commercial crops
Almond – Indian Market

India is an expanding market for almond and it is open to Afghan products through a preferential trade agreement and geographical proximity.

Almond imports in India

- Almond in India is a booming market since the 80s: 11 fold increase!
- This expanding market was largely filled by US Almond

Comparative Advantages of Afghanistan

- High quality varieties particularly in Northern Afghanistan
- Afghan Almonds are praised in India for their quality and therefore farmers and traders can retain higher price than world market
- Preferential trade agreement with India

Limitations of Afghanistan

- Low productivity of existing orchards system
- High quality seedlings no available
- Absence of sorting/grading and poor packaging
- Lack of Know-how for intensive farming

Commercial crops
Almond – Rationale business plan

Almond

- Expected farm gate price: 2.0 USD/kg (10% below current price)
- Distance plantation: 4 x 5 meters (500 trees/ha)
- Introduction of grafting seedlings in nurseries (using local varieties) is necessary to improve performance of almond orchards – grafting is not always applied except in Northern Afghanistan where the best varieties exists and grafting is done on standing trees in orchards

<table>
<thead>
<tr>
<th>YIELD</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<th>Year 5</th>
<th>Year 6</th>
<th>Year 7 and followings</th>
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<td>0.3</td>
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- Almond trees require 7 years to reach their full production potential
- Almond orchards produce for more than 30 years
High Gross Income, excellent IRR
High quality indigenous (Northern Afghanistan) varieties appreciated in India

- Investment cost for orchard installment is 1,090 US $ per hectare
- Total cost of 4 unproductive years: 3,290 US $ per hectare
- Almond Gross Income as from year 7 is US$ 4,300 per hectare
- Cost of production as from year 7 is ~1,400 US $ per hectare
- 31% Investment Return over a 15 years period

<table>
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Khulm, 12 March 2003
Commercial crops
Walnut – World Market

European countries are by large the main walnut importers in the world

World Walnut production 2003: 1.44 Million MT
- China 31%
- US 26%
- Turkey 11%
- Ukraine 5%
- Romania 4%
- Iran 14%
- Egypt 2%
- France 2%
- Serbia & Montenegro 2%

World Walnut imports: 98,000 MT
- European countries 74%
- Moldova 3%
- Turkey 3%
- Mexico 12%
- US 26%
- China 31%

- Main walnut producers are China and the US with about 57% of world production
- Main walnut importer European countries with about 74% of world import
- Afghan Walnuts (from Northern Afghanistan) are mainly exported to Europe via Turkish traders – Estimated export volume is 300 Mt of shelled walnut per year
- Cost of Afghan walnut is highly competitive on world market but production level is very low (see annex presentation phase 1)
- Afghanistan is the center of origin of walnut (FAO) and its varieties are suitable to exports to the world market

Commercial crops
Walnut - Rationale business plan

Walnut

- Expected farm gate price: US$ 0.55 /kg in shell (10% below current price)
- Distance plantation: 10 x 10 meters (100 trees/ha)
- Labor cost: US$ 1.5 /day (labor cost in remote areas of Afghanistan)
- Walnut requires minimum investment and operational cost and it is easy to transport. The crop is therefore adapted for remote regions of Afghanistan (Kunar, Nuristan, Badakhshan)
- Annual Land rent: US$ 125 /ha
- Introduction of grafted seedlings (using local varieties) is necessary to improve performance of walnut orchards

<table>
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<th>Year 2</th>
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- Walnut trees require 7 years to reach their production potential
- Walnut trees produces for more than 50 years
Comparatively Low Gross Income but low investment and low cost of production
Adapted for remote areas where other opportunities for commercial crops are limited

- Investment cost for orchard installment is 560 US $ per hectare
- Total cost of 3 unproductive years: 1,120 US $ per hectare
- Walnut Gross Income as from year 7 is US$ 1,015 per hectare
- Cost of production as from year 7 is ~370 US $ per hectare
- 25% Investment Return over a 15 years period

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## Commercial crops
### Pomegranate - Market

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<tr>
<th>Production</th>
<th>Market</th>
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<tbody>
<tr>
<td>- There are no statistics available on pomegranates on world database</td>
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<tr>
<td>- The first pomegranate producer is Iran with an estimated 4 million Mt per year (data informally gathered in Iran)</td>
<td></td>
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<tr>
<td>- Afghanistan annual production is very limited with an estimated 24,000 Mt</td>
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<table>
<thead>
<tr>
<th>Quality Potential</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>- Before the war, Afghanistan was the host of 48 leading world cultivars of pomegranate (FAO)</td>
<td></td>
</tr>
<tr>
<td>- Afghan pomegranates are known for their high quality</td>
<td></td>
</tr>
</tbody>
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- Increased market for fresh pomegranate in the Middle East and Asia reported by Iranian traders
- Pomegranates are appreciated for their decorative qualities in fruits arrangements and their anti-oxidant/healthy properties
- Price of all quality pomegranate paid to Iranian producers has increased by 15% in the past 3 years
- Price paid for export quality is high:
  - Export quality: 4500 Rials/kg or 0.52 USD/kg
  - Local fresh market quality: 1500 - Rials/kg or 0.17 USD/kg
  - Transformation industry: 700 Rials/kg or 0.09 USD/kg (High demand in Iran)
Pomegranate

- Networks to export pomegranates are in place
- Expected farm gate price: 20% of marketable yield for export to Middle East at 0.45 USD/kg (10% below current farm gate price for export quality) and 80% for local market at 0.07 USD/kg
- Distance plantation: 2 x 2 meters (2,400 trees/ha)
- Pruning and cleaning of flower remains on growing fruits can significantly improve the productivity and quality of pomegranate orchards – currently pomegranates in Afghanistan are rarely pruned

<table>
<thead>
<tr>
<th>YIELD</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
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<td>2</td>
<td>4</td>
<td>8</td>
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<td>22</td>
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</table>

- Pomegranate trees require 7 years to reach its production potential
- Pomegranate orchards produces for more than 30 years
Commercial crops
Pomegranate – Manual Pest Control

Rotating brush to clean Flower remains

- Cleaning flower remains of young pomegranate fruits is a key manual pest control (pomegranate moth) for biological pomegranate production

- In Iran, this is done with a home made implement using fishing line as a brush with a small electric rotor powered with a small battery

Soveh, Iran, 18 July 2004
Commercial crops
Pomegranate - Business plan

Excellent Gross income and profit provided Afghanistan can meet the high demand and increasing prices on the world market

- **Investment cost for orchard installment is 1,190 US $ per hectare**
- **Total cost for 4 unproductive years amount at 3,220 US $ per hectare**
- **Pomegranate Gross Income as from year 7 is US$ 3,380 per hectare if 20% of marketable fruits are paid at export price and US$ 5,060 if 40%**
- **Cost of production as from year 7 is ~1,190 US $ per hectare**
- **24% Investment Return over a 15 years period (38% if 40% fruits can be exported)**

<table>
<thead>
<tr>
<th>20% fruits at export price</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
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<th>20% fruits at export price</th>
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<th>Year 14</th>
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Kandahar, October 1996
Apricot
Fresh Apricot - Market

Countries with most market potential for Afghan fresh apricots are Pakistan and Saudi Arabia

- Total apricot world exports/imports represent ~0.18 million MT
- Uzbekistan and Turkey, are amongst the 10 top exporters
- The main world importers of apricots are European countries and Russia
- Saudi Arabia is the 3rd largest importer
- India current imports are insignificant, Pakistan imports ~2,500 MT annually

Top 10 importing countries - % total imports

- Germany 28%
- Italy 17%
- France 8%
- Austria 7%
- Switzerland 7%
- Russia 9%
- Saudi Arabia 11%
- Netherlands 3%
- Belgium 4%
- UK 6%

Top 10 exporting countries - % total exports

- France 36%
- Spain 24%
- Uzbekistan 5%
- Syria 6%
- Italy 11%
- Greece 4%
- Turkey 3%
- Netherlands 2%
- South Africa 4%
- US 5%

Countries with most market potential for Afghan dry apricots are Russia, Ukraine, India and Saudi Arabia

- Total dry apricot world exports/imports represent ~0.1 million MT
- Turkey represents 78% of total world exports while Uzbekistan and Pakistan are amongst the top 10 exporters
- The main dry apricot importer is Russia followed by Western countries – market could be prospected in Russia through existing trading links (with raisin)
- India is amongst the 10 top importers and imports have significantly increased from 100 MT to 2000 MT annually since the early 1990s
- Saudi Arabia is importing ~500 MT annually

Commercial crops
Apricot - Rationales business plan

![Image]

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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</table>

- Expected farm gate price: 0.32 USD/Kg
- Distance plantation: 5 x 5 meters (400 trees/ha)
- Selection of best local varieties for multiplication in nurseries is required – some of the local varieties have good export potential
- Grafting on selected root-stock can significantly improve crop performance of apricot orchards

- Apricot trees require 6 years to reach its production potential
- Apricot orchards produce for more than 30 years
Commercial crops
Apricot - Business plan

Good Gross Income and profit
High quality Afghan varieties suitable for export in regional markets

- Investment cost for orchard installment is 900 US $ per hectare
- Total cost for 3 unproductive years amount at 3,400 US $ per hectare
- Apricot Gross Income as from year 6 is US$ 3,920 per hectare
- Cost of production as from year 6 is ~1,330 US $ per hectare
- 32% Investment Return over a 15 years period

<table>
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<tr>
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<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
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<table>
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</tbody>
</table>

Mazar, 5 June 2004
The main markets for Afghan peach and nectarine are the local market and Pakistan.

- Total peach & nectarine world exports/imports represent nearly 1.3 million MT.

- Peach is grown in Afghanistan but nectarine is not but there is a potential market as nectarine grown in Iran are also much praised by Afghan refugees.

- The main exporters are European countries and the US.

- The main importing countries are European countries, Canada & Russia.

- Most of the trade is done outside of Afghanistan region.

- Saudi Arabia is a large consumer of peach and nectarine.

- The trade agreement between Afghanistan and India does not cover peach and nectarine.

**Source:** FAOSTAT, [www.fao.org](http://www.fao.org)
Commercial crops
Peach - Rationales business plan

<table>
<thead>
<tr>
<th>YIELD</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
</tr>
</thead>
<tbody>
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<td>3</td>
<td>20</td>
<td>20</td>
<td>6</td>
<td>7</td>
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</table>

- Expected farm gate price: 0.28 USD/kg
- Distance plantation: 4 x 2.5 meters (1,000 trees/ha)
- Climatic hazard integrated in the model: 1 year damaging 50% of the crop over 7 years
- 7 years crop cycle
- Wood is sold after year 7 harvest (estimated 25kg wood/tree)
- Grafting on selected root-stock can significantly improve crop performance of peach orchards

- Peach trees require 4 years to reach their full production potential
- Peach intensive orchards are replaced the 7th year
Commercial crops
Peach - Business plan

High Gross Income, Good profit, short cycle fruit tree crop (7 years)
Need of diversifying existing varieties (imports from abroad)

- Investment cost for orchard installment is 1,428 US $ per hectare
- Total cost for 3 unproductive years amount at 4,340 US $ per hectare
- Peach Gross Income peaks up to US$ 5,700 per hectare in years 4 and 5
- Cost of production in years 4 and 5 is ~2,010 US $ per hectare
- 24% Investment Return over a 7 years period

<table>
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<th>Year 4</th>
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Mazar, 5 June 2004
Commercial crops
Nectarine - Rationales business plan

Nectarine

- Expected farm gate price: 0.28 USD/kg
- Distance plantation: 4 x 2.5 meters (1,000 trees/ha)
- Climatic hazard integrated in the model: 1 year damaging 50% of the crop at full production period over 7 years
- 7 years crop cycle
- Wood is sold after year 7 harvest (estimated 25kg wood/tree)
- Grafting on selected root-stock is required to obtain good crop performance of nectarine orchards

<table>
<thead>
<tr>
<th>YIELD</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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<td>20</td>
<td>20</td>
<td>6</td>
<td>7</td>
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</tbody>
</table>

- Nectarine trees require 4 years to reach their production potential
- Nectarine intensive orchards are replaced the 7th year
Commercial crops
Nectarine - Business plan

High Gross Income and excellent profit, short cycle fruit tree crop (7 years)
Good varieties need to be introduced

- Investment cost for orchard installment is 1,428 US $ per hectare
- Total cost for 3 unproductive years amount at 4,340 US $ per hectare
- Nectarine Gross Income peaks up to US$ 6,520 per hectare in years 4 and 5
- Cost of production in years 4 and 5 is ~2,010 US $ per hectare
- 41% Investment Return over a 7 years period

<table>
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<th>Year 3</th>
<th>Year 4</th>
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Tehran, 21 July 2004
The main markets for Afghan apples are the local market and Pakistan.

- Total apple world exports/imports represent ~5.5 million MT.
- Top 10 exporters are European countries, Chile, China & South Africa.
- The 3 main apple importers are Germany, UK and Russia followed by other Western countries.
- Most of the apple trade is done outside of Afghanistan region.
- Yet, Saudi Arabia and United Arab Emirates are large consumers of apple and are supplied by European countries and New Zealand.
- The trade agreement between Afghanistan and India does not cover apple – India started importing apple since 1998.
- Pakistan imports ~2,500 MT annually.

Commercial crops
Apple - Rationales business plan

- Expected farm gate price: 0.26 USD/kg
- Distance plantation: 3.5 x 1.5 meters (1,900 trees/ha)
- Structures required to support the trees (cement beams and galvanized wires)
- Grafting on selected root-stock can significantly improve crop performance of apple orchards
- Need of further market research for varieties selection

<table>
<thead>
<tr>
<th>YIELD</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5 and following</th>
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<td>2.5</td>
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</table>

- Apple trees require 5 years to reach its production potential
- Apple intensive orchards are replaced after 15 to 18 years
Commercial crops
Apple - Business plan

High investment cost, High Gross income, labor intensive and Good profit but small variation on prices can affect investment return

- Investment cost for orchard installment is 8,100 US$ per hectare
- Total cost for 3 unproductive years amount at 10,100 US$ per hectare
- Apple Gross Income as from year 5 is 4,940 US$ per hectare
- Cost of production as from year 6 is ~1,720 US$ per hectare
- 21% Investment Return over a 15 years period

<table>
<thead>
<tr>
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Wardak, September 1994
Most of the table grapes imports/exports are done between the southern and northern hemispheres for the Western countries and China

- Total world grape production: 60 million MT; the large majority is for the vine industry
- Total world import/export of grapes amount at 2.6 million MT; the majority being fresh table grapes
- The main grapes importers are the US, European countries and China
- In Afghanistan region, Pakistan, Saudi Arabia, UAE are the main importers between 20,000 and 35,000 Mt/year
- India has insignificant grapes imports although it imported more than 15,000 MT/year in the 70s
- The main grapes exporters are Chile, European countries, US and South Africa

Grapes
Raisin Market

Countries with most market potential for Afghan raisins are Russia, United Arab Emirates and India (for high quality green raisin)

The numerous seedless grape varieties cultivated in Afghanistan can be marketed as fresh or dried products (since Gibberellins are not applied to increase the size of the grapes)

- Total raisin world exports/imports represent ~0.65 million MT
- Top 10 exporters capture 93% of total exports - Turkey, Iran and Uzbekistan are amongst the 10 top exporters
- India officially imports ~6,000 MT raisin per year and the imports are not increasing since the 70s
- The main world importers of raisins are UK, Germany, Russia and Netherlands
- The United Arab Emirates are amongst the 10 top importers
- Trading links with Russia are in place

**Top 10 importing countries - % total imports**

- US 20%
- UAE 12%
- Russia 10%
- Netherlands 9%
- Japan 7%
- Canada 7%
- France 6%
- UK 5%
- Germany 5%
- Australia 5%

**Top 10 exporting countries - % total exports**

- Turkey 33%
- Iran 21%
- US 20%
- Argentina 17%
- Chile 7%
- South Africa 6%
- Greece 5%
- Belgium 2%
- Ukraine 2%
- Netherlands 2%

Commercial crops
Grape - Rationale business plan

Grape

- Expected farm gate price: 0.26 USD/kg
- Distance plantation: 3.5 x 1.5 meters (1,900 trees/ha)
- Structures required to support the vines on trellises (cement beams and galvanized wires)
- Grafting is not required in the region

<table>
<thead>
<tr>
<th>YIELD</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5 and following</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mt/ha</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>20</td>
<td>25</td>
</tr>
</tbody>
</table>

- Grape require 5 years to reach its full production potential
- Grape produces for more than 30 years
Big investment, brings high income and profit, also labor intensive. Full production potential is reached fast (4th year)

- Investment cost for vineyard installment is 8,293 US $ per hectare
- Total cost for 3 unproductive years amount at 10,800 US $ per hectare
- Grape Gross Income as from year 4 is US$ 6,060 per hectare
- Cost of production as from year 4 is ~2,020 US $ per hectare
- 24% Investment Return over a 15 years period

<table>
<thead>
<tr>
<th>Year</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
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<th>Year 10</th>
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<tbody>
<tr>
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<td>6654</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>515</td>
<td>0</td>
</tr>
<tr>
<td>Operating Cost</td>
<td>1781</td>
<td>801</td>
<td>2026</td>
<td>1826</td>
<td>2220</td>
<td>1831</td>
<td>2220</td>
<td>1911</td>
<td>2220</td>
</tr>
<tr>
<td>Labor Cost</td>
<td>444</td>
<td>359</td>
<td>605</td>
<td>775</td>
<td>874</td>
<td>860</td>
<td>874</td>
<td>875</td>
<td>874</td>
</tr>
<tr>
<td>Gross Income</td>
<td>0</td>
<td>40</td>
<td>1540</td>
<td>4860</td>
<td>6060</td>
<td>6060</td>
<td>6060</td>
<td>6060</td>
<td>6060</td>
</tr>
<tr>
<td>Cash Flow</td>
<td>-2905</td>
<td>-7415</td>
<td>-486</td>
<td>3034</td>
<td>3840</td>
<td>4229</td>
<td>3840</td>
<td>3634</td>
<td>3840</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Year 11</th>
<th>Year 12</th>
<th>Year 13</th>
<th>Year 14</th>
<th>Year 15</th>
<th>Year 16</th>
<th>Year 17</th>
<th>Year 18</th>
<th>Year 19</th>
<th>Year 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>515</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Operating Cost</td>
<td>2220</td>
<td>1615</td>
<td>2220</td>
<td>1831</td>
<td>2220</td>
<td>1911</td>
<td>2220</td>
<td>1831</td>
<td>2220</td>
<td>1911</td>
</tr>
<tr>
<td>Labor Cost</td>
<td>874</td>
<td>564</td>
<td>874</td>
<td>860</td>
<td>874</td>
<td>875</td>
<td>874</td>
<td>860</td>
<td>874</td>
<td>860</td>
</tr>
<tr>
<td>Gross Income</td>
<td>6060</td>
<td>1860</td>
<td>6060</td>
<td>6060</td>
<td>6060</td>
<td>6060</td>
<td>6060</td>
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<td></td>
</tr>
<tr>
<td>Cash Flow</td>
<td>3840</td>
<td>245</td>
<td>3840</td>
<td>4229</td>
<td>3840</td>
<td>3634</td>
<td>3840</td>
<td>4229</td>
<td>3840</td>
<td>4149</td>
</tr>
</tbody>
</table>

Urmia, Iran, 23 July 2004
Commercial crops
Conclusion – Key Findings and Action

It is a PROFITABLE business to plant commercial fruits orchards in Afghanistan. Yet, know-how and quality seedlings for intensive farming are lacking.

Business plans show that cultivation of all temperate fruits are PROFITABLE and 600,000 potential growers could benefit.

But it takes several years for tree crops to reach their full production potential.

Positive impact on employment in rural Afghanistan: estimated average of 180 MAN-DAYS* labor per Ha of commercial orchard.

**Program on Horticulture urgently needed to support large scale plantations at national level – Role of public sector need to be further defined.**

**Mid-term approach needed: impact of a program can be seen after 5 to 10 years.**

**Transfer of technology from neighboring countries (Iran and Pakistan).**

**Orchard system to be developed based on experience in Iran mainly and Pakistan.**

**Network of professional nurseries need to be in place.**

---

* Wheat provide between 60 and 69 man-days/ha. Hector Maletta, 2003, FAO

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**Know-how on intensive fruits tree cultivation is lacking in Afghanistan.**

Excellent expertise is existing in neighboring countries and particularly in IRAN which has similar agro-climatic and marketing conditions as Afghanistan.

High QUALITY SEEDLINGS are not available in sufficient quantity.
Commercial crops
Conclusion - Producers

Public sector involvement is required, but installation of new orchards creates significant employment opportunities in rural areas

Who can implement commercial fruit orchards?

WITHOUT Public Sector Support:

Rural population with experience in commercial orchards in Iran/Pakistan and with sufficient resources to cover orchards installation expenses and first years without production:

- Few landlords*
- Few better-off rural population

WITH Public Sector Support:

- 600,000 producers of horticulture crops

* See land tenure discussion in Annex I
Commercial crops

Conclusion – Let us open the debate!....

With an average $80/kg farm gate opium price (2004 price ?), intensive commercial orchards at full production period can have a higher cash flow than poppy

<table>
<thead>
<tr>
<th>Cash Flow US$/Ha</th>
<th>Wheat</th>
<th>Walnut</th>
<th>Pomegranate</th>
<th>Poppy $30/Kg</th>
<th>Apricot</th>
<th>Peach</th>
<th>Almond</th>
<th>Pistachio var. Afg</th>
<th>Pistachio var. Iran</th>
<th>Nectarine</th>
<th>Poppy $100/Kg</th>
<th>Apple</th>
<th>Grapes</th>
<th>Poppy $330/Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994-2000 Average</td>
<td>180</td>
<td>320</td>
<td>635</td>
<td>2000</td>
<td>2340</td>
<td>2390</td>
<td>2530</td>
<td>2950</td>
<td>3010</td>
<td>3030</td>
<td>3060</td>
<td>3155</td>
<td>3180</td>
<td>3840</td>
</tr>
<tr>
<td>2002-2003</td>
<td>180</td>
<td>320</td>
<td>635</td>
<td>2000</td>
<td>2340</td>
<td>2390</td>
<td>2530</td>
<td>2950</td>
<td>3010</td>
<td>3030</td>
<td>3060</td>
<td>3155</td>
<td>3180</td>
<td>3840</td>
</tr>
</tbody>
</table>

Opium Poppy Cash Flow rationales: Based on second hand information; Yield 46 kg/ha, no credit included, labor cost variable between 2.4 to 5 USD/man-day depending on opium poppy price, labor 350 man-days/ha/year, production cost by farming operation H. Maletta 2003; UNODC reports 1999, 2001, 2002 and 2003; Mansfield, 2001

At opium poppy price in 2002 and 2003, no commercial orchards can match opium cash flow
Fruit Juices
Proposed Institutional Setup for a National Horticulture Program

PROGRAM LEAD AGENCY – COORDINATION

Possible agencies: FAO-UNDP/MAAH

FUNCTION

TAECHNICAL LEAD AGENCY

Orchards system
Leaflet preparation
Training/capacity building
Integrated pest management

NURSERY

Multiplication of high quality seedlings
Selection and identification of species or varieties
Subsidized sell of seedlings to producers

MARKET RESEARCH

Continuous market research for identification of best species or varieties for multiplication
Support to export of existing horticulture products

CREDIT/FOOD SUPPORT

Credit or food support for orchard establishment and first years with negative cash-flow

TECHNOLOGY TRANSFER

Technical support to producers who procured seedlings for first 5 years
Coordination with Technical lead agency

VARIETY COLLECTION

Protection of existing collection in nucleus nurseries
Identification of new germplasms

POTENTIAL AGENCIES

FAO/MAAH (Ministry of Agriculture)
IFHope-Mercy Corps-etc../MAAH
Altai/Min of Commerce
WFP-Credit institutions
IFHope-Mercy Corps, etc../MAAH
FAO, ICARDA

ACTIVITIES

PRODUCERS

(particularly those who invested in procuring seedlings from the nurseries)
Contents of presentation

PRODUCTION OPPORTUNITIES

PROCESSING OPPORTUNITIES

• Raisins
• Fruit juices

MARKETING OPPORTUNITIES
The raisins sector offers opportunities that can be seized rapidly through quality enhancement and marketing channels improvement.

**Available production capacity**
- Sizeable production of grapes (520,000 mt/year - First fresh fruit cultivated in Afghanistan)
- Existing raisin processing factories. Yet most of them are not active

**Market opportunities**
- Opportunities on the Indian market
- Growing ethnic food market in Western countries
- Presence of Afghan Aftabi on Russian market

**Competitive advantages**
- Afghanistan as brand
- Ideal climatic conditions for drying and organic production
- Variety potential (More than 40 varieties identified within the frame of the project)
- Proximity of significant markets
Raisins processing
Market – Sun-dried raisins

**Afghan sun-dried raisins have good opportunities in Russia and in India where quality standards are most accessible**

### Sun-dried raisins
- Three main kinds: Currants, Sultana and Aftabi
- Commodity market
- Mainly used in baking industry

### Indian market
- Major dried fruits market ($1Bil, +20% growth)⁽¹⁾
- Excellent reputation of Afghan products
- Accessible quality requirements

### Russian market
- Imports 50 Mil tons + 50% from 1998 to 2002⁽²⁾
- Almost only destination for Afghan exports today
- Increasing yet lower quality requirements than EU

### EU markets
- UK and Germany: 30% of global imports (160,000 tons)⁽²⁾
- Black raisins (flame) from Chile and Australia
- Sultana market saturated by Turkey

### Opportunities for Sultanas
- Marketing optimization
- Branding

### Increase volumes of Aftabi
- Marketing optimization
- Quality improvement

### Market for Qaisar raisins
- High focus on quality
- Difficult market to enter

---

**Sources:**
-⁽¹⁾ Asia Times
-⁽²⁾ USDA
Raisins processing
Market – Long green raisins

Afghan long green raisins are highly appreciated in India and show high potential on western niche markets.

Green raisins
- Three main producers: Iran, Afghanistan, China (Xinjiang)
- Afghanistan mostly exports to India
- Luxury product

Indian market
- Established business
- Good reputation of Afghan products
- Accessible quality requirements

Western ethnic food markets
- Growing market
- Market dominated by China
- Highest quality / traceability requirements

• Marketing optimization
• Branding

• Premium quality positioning
• Focus on cleanliness
• Extensive branding
Raisins processing
Market – Focus on Indian market

India is a sizeable market where the quality of Afghan dried fruits is recognized and highly appreciated.

- Raisin used as a common cooking ingredient
- Green raisins mainly come from India and Afghanistan. Fewer from China
- Preferential import duty on Afghan raisins: 52% instead of 105% for other countries
- Local production of 30,000 tons only\(^1\)

1 Billion people

- Upper-class (30-50 million people)
  - Target for high quality long green raisins
  - Retailer price: $5 per kg
- Middle-class (200-300 million people)
  - Medium quality green raisins and sultanas
  - Retailer price: $2.5 per kg
- Lower-class (650-750 million people)
  - Sun-dried raisins
  - Retailer price: $1.2 per kg

\(^1\) Estimation based on FAO figures
## Raisins processing

### Supply Chain

<table>
<thead>
<tr>
<th>Current marketing channels</th>
<th>Vertical integration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FARMERS</strong></td>
<td><strong>FARMERS</strong></td>
</tr>
<tr>
<td><strong>COMMISSION AGENT</strong></td>
<td><strong>INTEGRATED PROCESSING AND MARKETING</strong></td>
</tr>
<tr>
<td><strong>FACTORY</strong></td>
<td><strong>LOCAL PARTNER</strong></td>
</tr>
<tr>
<td><strong>EXPORTERS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>LOCAL PARTNER</strong></td>
<td></td>
</tr>
</tbody>
</table>

- Factories are used on a rental basis by the exporters. Processing business is not profitable.
- Attempts for quality improvement by the farmers are not rewarded by the commission agents.

### Marketing is the key. Vertical integration of the supply chain can best leverage the value of the raisins.

- Plant owned by a trader
  - Quality control to address high value markets
- Partnerships with trained farmers
  - Guarantee on quality, price and quantity of supplies

"The quality before the arrival at the factory is very important. If it is good, little is wasted and just very light process is needed."

*Niyazee Memur, General Manager of Nimeks, Turkey*
Raisins processing
Requirements – Growing and drying process

New, cleaner drying techniques can maximize product quality

**Paper drying trays, Kandahar**
- Easy implementation
- 4-5 days for drying

**Gerès fruits dryer, RAMP/ACTED project, Charikar**
- Investment of $2000
- Fast drying (2/3 days)
- High protection from dust
- Re-usable

**Dried on Vine, California**
- Use of trellies leading to higher yield for grapes
- Reduces handling operations, limiting contamination risks
- Low production costs
Raisins processing
Requirements – Raisin processing

Manual sorting is key when processing raisins for exports.

“More than taste, our first concern is the cleanliness of the raisin”, A. Sumar, Voicevale’s CEO

Manual sorting
- Required by quality-conscious customers
- Guarantees highest quality
- Sizeable workforce (1 person = 24kg/day)
- Employment for unskilled workers
  e.g. 600 mt of Aftabi raisins exported by CADG mainly to Europe after manual sorting

Equipment / Machinery
- Need for a laboratory for quality control
- Good quality machineries can be purchased in Iran or in Turkey
- Most advanced equipment such as laser sorters (cost around US$ 300,000) are price prohibitive given the labor cost of Afghanistan
Raisins processing
Case study – Raisin factory in Kandahar

A model has been developed for a factory in Kandahar, addressing Russian market for Aftabi, Indian market for Sultana and EU and India for green raisins

<table>
<thead>
<tr>
<th>GROWING</th>
<th>Sun-dried raisins</th>
<th>Green raisins</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Growing process control for best yield and quality</td>
<td>Dried in tunnel in the plant</td>
</tr>
<tr>
<td></td>
<td>Optimize grapes cleanliness in farm</td>
<td></td>
</tr>
<tr>
<td>DRYING</td>
<td>Protect drying grapes from dust and stones</td>
<td>Dry cleaning</td>
</tr>
<tr>
<td></td>
<td>Implement quality-optimizing techniques</td>
<td>Sorting</td>
</tr>
<tr>
<td>PROCESSING</td>
<td>Water cleaning</td>
<td>Sulfur fumigation (for Sultana)</td>
</tr>
<tr>
<td></td>
<td>Sorting</td>
<td></td>
</tr>
<tr>
<td>MARKETING</td>
<td>Guarantee of quality</td>
<td>Branding</td>
</tr>
</tbody>
</table>

Partnerships with trained farmers
- Strong quality requirements for the farmers
- Incentive price to encourage best practice
e.g. Turkey, Izmir region
1 ton of fresh grape: $125
Raisin equivalent (250 kg): $195

Plant owned by the trader
- Producing higher quality sun-dried raisins (Aftabi and Sultana)
- Takes care of drying green raisins for optimal quality control
- Regional machineries
- Manual sorting

1 ton of fresh grape: $125
Raisin equivalent (250 kg): $195
Raisins processing
Economics – Raisin factory in Kandahar

Raisins can generate good return on investment
If marketed properly

Sizing: Capacity for 3,100 mt Aftabi, 1500 mt of Sultana, 300 mt of dried-in-tunnel Green raisin

Approach: Start a processing plant with an existing marketing channel for 2,000 mt of medium-quality Aftabi for the Russian market and move to higher margin products (Sultana and green raisins)

Economics

- Investment in such a plant is $ 600,000
  - Plant pays for itself in 5 years
  - Profit in year 10 reaches $ 1 million
- Raw material cost is 90% of the cash requirement ($ 2 million in year 1)
- Green raisin processing capacity could be doubled after year 5. ($30,000 investment could bring huge return if market is expanding rapidly)

In thousand US$

<table>
<thead>
<tr>
<th>Year</th>
<th>Investment</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>598</td>
<td>6</td>
<td>5</td>
<td>5</td>
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<td>9</td>
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<td>11</td>
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<tr>
<td></td>
<td>Operating cost</td>
<td>1,743</td>
<td>1,963</td>
<td>2,200</td>
<td>2,540</td>
<td>2,960</td>
<td>3,288</td>
<td>3,669</td>
<td>4,179</td>
<td>4,792</td>
<td>5,644</td>
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<td>Labor cost</td>
<td>121</td>
<td>129</td>
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<td>158</td>
<td>166</td>
<td>180</td>
<td>194</td>
<td>212</td>
<td>234</td>
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<tr>
<td></td>
<td>Gross income</td>
<td>1,870</td>
<td>2,113</td>
<td>2,446</td>
<td>2,862</td>
<td>3,458</td>
<td>3,845</td>
<td>4,375</td>
<td>4,995</td>
<td>5,859</td>
<td>6,910</td>
</tr>
<tr>
<td></td>
<td>Cash flow</td>
<td>-592</td>
<td>14</td>
<td>103</td>
<td>170</td>
<td>329</td>
<td>381</td>
<td>519</td>
<td>612</td>
<td>842</td>
<td>1,020</td>
</tr>
</tbody>
</table>
Raisins processing
Implementation

Potential impact on local employment and farmers revenue is great

- Marketing is key to best leverage the value of the raisins on quality markets
- Assessment of existing facilities by machine manufacturers could reduce necessary investments
- Training of the farmers by public sector and agricultural extension NGOs is a major asset to develop the industry

Raisin processing can greatly contribute to regional development

- 300 women employees in the sorting lanes at year 10
- US$ 33 million of raw material bought from local farmers over 10 years

$38 M Revenue for the whole community generated over 10 years

- Revenue to farmers
- Qualified HR
- Unqualified Men
- Unqualified women
- Revenue to the Company
**Fruit juices**

**Market Opportunity**

Fruit juices are the largest and fastest growing market for processed food in Afghanistan

- Quality / taste of Afghan fruits
- Climate and varieties are favorable for high quality products which could make Afghanistan a leader in fruit concentrates
- Import substitution (see phase 1)
  - The market of fruits juices in Afghanistan is estimated at **about 1 billion Afghani ($20 million)** with a yearly growth of around 15%
  - Last year Afghanistan imported 40 million liters of juices, mostly from Iran and Pakistan
  - Main flavors are mango 35%, sour cherry 25%, apple 30%, others include (orange, pomegranate, grape, pear)

Image from Shahdiran
**Fruit Juices**
**Fruit processing industry**

Commercial fruit juices is the main market for Afghan fruits transformation industry, although there is a market for apricot nectars (substitution to mango nectars)

<table>
<thead>
<tr>
<th>FRESH FRUIT JUICES</th>
<th>FRUIT JUICES CONCENTRATES</th>
<th>NECTARS (FRUIT PUREE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Fruits</td>
<td>Apple, grape, cherry, pomegranate</td>
<td>Apricot, peach, strawberry, mango</td>
</tr>
<tr>
<td>Short shelf life</td>
<td>Long shelf life</td>
<td>Long shelf life</td>
</tr>
<tr>
<td>Low volume</td>
<td>Industrial production, large production units (min. 1,000 Mt)</td>
<td></td>
</tr>
<tr>
<td>Cold storage required to increase volume</td>
<td>High volume of fruits available on the market</td>
<td>Industrial production, medium size production units</td>
</tr>
<tr>
<td>Juice production limited to harvesting season</td>
<td>High technology</td>
<td>Require medium volume of fruits required</td>
</tr>
<tr>
<td>Low investment cost</td>
<td>High investment cost</td>
<td>Medium-High technology</td>
</tr>
</tbody>
</table>

**Niche Market**

- 65% juice sales

<table>
<thead>
<tr>
<th>Crushing</th>
<th>Pressing machine</th>
<th>Bottling</th>
<th>Pasteurisation</th>
<th>Direct Sale or Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crushing</td>
<td>Pressing machine</td>
<td>Filtration</td>
<td>Concentration (1/10)</td>
<td>Aseptic packaging</td>
</tr>
<tr>
<td>Storage</td>
<td></td>
<td></td>
<td>Aseptic packaging</td>
<td></td>
</tr>
<tr>
<td>Blending</td>
<td></td>
<td></td>
<td>Storage</td>
<td></td>
</tr>
<tr>
<td>Pasteurizing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filling and Packaging</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crushing</th>
<th>Pressing machine</th>
<th>Bottling</th>
<th>Pasteurisation</th>
<th>Direct Sale or Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filtration</td>
<td>Concentration (1/5)</td>
<td>Normal packaging</td>
<td>Storage</td>
<td></td>
</tr>
<tr>
<td>Blending</td>
<td>Pasteurizing</td>
<td>Filling and Packaging</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

65% juice sales

35% juice sales (mango)
Fruit transformation industry requires high volume of low grade fruits, but the current production level in Afghanistan is too low except for grapes.

Apple reception in a fruit concentration company in Urmia

Trucks are off-loading apples in these containers and the fruits are moving to the factory using water flow.

“\textit{The fruit concentrate industry is highly competitive and new actors entering the business today should place concentration lines in the middle of production areas in order to reduce transportation cost of fresh fruits},” Mr. Molavi, director Sarouneh Ltd, Urmiah, Iran.
**Fruit juices**

**Fruits processing industry - Juices and Nectars**

Fruit concentration industry requires high investment, high and costly technology and top engineering capacities in food industry – TOO EARLY FOR AFGHANISTAN

<table>
<thead>
<tr>
<th>High cost machineries required for a concentration line (0.2 to 0.5 million US $ each)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pressing machine</strong></td>
</tr>
<tr>
<td><strong>High capacity filtration machine</strong></td>
</tr>
<tr>
<td><strong>Vacuum/low temperature concentration tower</strong></td>
</tr>
<tr>
<td><strong>Aseptic packing line</strong></td>
</tr>
</tbody>
</table>
Fruit juices
Filling industry

Fruit juices filling lines can be installed in Afghanistan. It is the first step toward a fruit processing industry in the country.

**FRUIT JUICES/NECTARS FILLING LINE**
- Concentrates and Puree
- High quality products
- Medium investment cost
- Technology needs to be imported from neighboring countries (Iran and Pakistan)
- Iranian and Pakistani companies having significant shares of the market in Afghanistan have more chances to succeed
- Implementation in partnership with Afghan private sector

**FRUIT DRINKS FILLING LINE**
- All Flavor
- Low quality products
- Do not require fruit production
- Water + flavor + sugar + citric acid + other additives
- Only blending and filling (no processing of fruits)

Extra opportunity for a company investing in a filling unit.

Water (after treatment)
Concentrates or Purée
Sugar, aroma and additives
Blending
Filtration
Homogenization
Pasteurization
Hot fill
Septic fill
Doy Pack
Glass bottles
Tetra Pak

40 million liters market + 15% annual increase
New markets can be prospected from Afghanistan (Central Asia, Middle East, Pakistan, …)
### Fruit juices

**Filling line requirements**

<table>
<thead>
<tr>
<th>Investment for a filling plant with an initial capacity of 15 million liters amounts at 1.3 million US$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production:</strong></td>
</tr>
<tr>
<td>- Production capacity of 15 million liters a year (based on machineries available in Iran and Pakistan and actual business opportunities developed by interested Iranian and Pakistani investors which already have such a market share in Afghanistan)</td>
</tr>
<tr>
<td>- 200 to 250 ml packaging (Doy Pack, Tetra Pack, Glass bottles) is the right size for the Afghan market</td>
</tr>
<tr>
<td><strong>Machineries:</strong></td>
</tr>
<tr>
<td>- Water treatment unit</td>
</tr>
<tr>
<td>- Blending unit</td>
</tr>
<tr>
<td>- Filtration unit</td>
</tr>
<tr>
<td>- Homogenizer and pasteurizer</td>
</tr>
<tr>
<td>- Filling line</td>
</tr>
<tr>
<td><strong>Buildings and land:</strong></td>
</tr>
<tr>
<td>- 1 ha of land</td>
</tr>
<tr>
<td>- 2 industrial building of 2800 m2 (filling lines and storage)</td>
</tr>
<tr>
<td>- 1 water reservoir</td>
</tr>
<tr>
<td><strong>Utilities:</strong></td>
</tr>
<tr>
<td>- 300-500 KVA electric supply and back up generator</td>
</tr>
<tr>
<td>- Steam generator 4 MT/hour, cooling tower and water pool</td>
</tr>
<tr>
<td>- Cold room for storage of concentrates/purées</td>
</tr>
</tbody>
</table>
## Filling line options

Several options are available with different costs and advantages

### Doy Pack
- Cheaper equipment (reverse-engineered in Iran), know-how available
- Existing market
- No recycling

### Glass bottle
- Cheaper equipment (reverse-engineered in Pakistan), know-how available
- Glass factories in Pakistan
- Need to use disposable glass or organize recycling

### Tetra Pak
- More expensive equipment (imported from Sweden) and packaging material (available in Pakistan)
- Strong commitment to customers’ marketing strategy
- Company plans on advertising in Afghanistan on the purity theme
- Recycling is a priority of the company, need to organize collection
Fruit juices
Economics

Investments in fruit juices filling industry by companies who already have significant market share is profitable

- Investment for a filling plant is close to US$ 1.3 million
- The plant can pay for itself in less than 4 years
- Up to 2 extra lines can be added for US$ 250,000 each
- Likely scenario brings 26% return (best case scenario with 3 lines maximizes profit)

<table>
<thead>
<tr>
<th>Number of filling lines</th>
<th>1</th>
<th>1</th>
<th>1</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity (million liters)</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Capacity use</td>
<td>20%</td>
<td>80%</td>
<td>90%</td>
<td>70%</td>
<td>80%</td>
<td>90%</td>
<td>90%</td>
<td>90%</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>Production (million liters)</td>
<td>3</td>
<td>12</td>
<td>14</td>
<td>21</td>
<td>24</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>Production (million doypacks)</td>
<td>15</td>
<td>60</td>
<td>68</td>
<td>105</td>
<td>120</td>
<td>135</td>
<td>135</td>
<td>135</td>
<td>135</td>
<td>135</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Investment (Capital Expenses)</th>
<th>1,296,900</th>
<th>660,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Operational Expenses</td>
<td>1,517,060</td>
<td>5,668,240</td>
</tr>
<tr>
<td>Total sales revenue</td>
<td>1,500,000</td>
<td>6,000,000</td>
</tr>
<tr>
<td>Revenue less Operational Expenses</td>
<td>-17,060</td>
<td>331,760</td>
</tr>
<tr>
<td>Revenue less Expenses</td>
<td>-1,313,960</td>
<td>331,760</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRR</th>
<th>26%</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV</td>
<td>$411,681</td>
</tr>
</tbody>
</table>
Fruit juices
Implementation

The public sector needs to support food safety and recycling programs

The public sector may support the establishment of fruit juices filling lines as it is the first step toward the development of a fruit processing industry which could benefit a large number of Afghan fruits producers:

- Insure energy supply for operating filling line
- Support investors to reach certification requirements
- Package recycling program

Image from Shahdiran
## Issues to tackle as a priority

Logistics, training of staff, quality control and certification are issues to tackle as a priority during implementation.

| **Logistics** |  
|---|---|
| Logistics will be one of the first factor to take into consideration prior to implementation.  
Supply of water and electricity are major issues as well:  
- Power Voltage variations damage equipment, Power cuts interrupt production process. A factory needs between 200 kVA and 1000 kVA power generation capacity. Purchasing an individual stabilizer can prevent from Voltage variations. Yet, cost remains prohibitive ($ 200,000). |

| **Training** |  
|---|---|
| Intensive trainings will have to take place due to the very limited supply of trained personnel, especially management, marketing, accounting and technical skills.  
Joined venture with a foreign company in the fruit industry may facilitate know-how transfer to Afghanistan |

| **Quality control and certification** |  
|---|---|
| Horticulture processing industries require clean and safe environment for food safety reasons and certification for exports to international markets. |
**Food safety and Certification**

Implementation of food safety control and certification of products and production plants are necessary for food industry development and export of food products.

| Limited activities in food safety control in Afghanistan |
| Necessity to enforce food safety regulation for horticulture fresh products and local food processing industry |
| Certification is necessary for export to international markets |
| Some products cannot transit through neighboring countries due to lack of certification capacity in Afghanistan |
| No laboratories accredited in Afghanistan |

- Operate Food safety control in Afghanistan
- Training of Afghan private companies
- Certification agencies in Iran and Pakistan can certify in Afghanistan upon request, and are interested in establishing offices in Afghanistan
- For some products, independent certification may be already required (e.g. cereal seeds)
- Calibration can be done from neighboring countries - Very costly

Implementation of food safety control and certification of products and production plants are necessary for food industry development and export of food products.
### Contents of presentation

#### PRODUCTION OPPORTUNITIES

#### PROCESSING OPPORTUNITIES

#### MARKETING OPPORTUNITIES

<table>
<thead>
<tr>
<th>Marketing Improvements</th>
<th>New Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholesale markets</td>
<td>Quality driven local market</td>
</tr>
<tr>
<td>Packaging</td>
<td>Organic</td>
</tr>
<tr>
<td>Storage/Cold Storage</td>
<td>Fair trade</td>
</tr>
</tbody>
</table>
Clean fruits are marketed in clean wholesale markets

<table>
<thead>
<tr>
<th>Tehran Wholesale Market</th>
<th>Dubai Wholesale Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covered area wholesale market</td>
<td>Covered area wholesale market</td>
</tr>
<tr>
<td>Clean and easy access</td>
<td>Clean and easy access</td>
</tr>
</tbody>
</table>

- Basic Infrastructures such as concrete floor, drainage, covered areas, clean water supply, sanitary facilities, residue collection, electricity are required.
- In Iran and Dubai, wholesale markets are located outside of main cities.
- Cold storage may be best located near wholesale markets.
Packaging

Packaging horticulture products in wooden crates (sandook) results in increased post-harvest losses

- Wooden crates “sandooq” is the only package available for fresh horticulture products in Afghanistan – only one use is possible
- High rate of post-harvest waste: 20 to 40 %

- Wholesalers are the current buyers of packaging
- Retailers and quality-driven market have interest in improving packaging
- Improving packaging will develop with exports
- Mean of advertising for traders (brands and trader’s contact can be written on carton boxes)

Mazar-e Sharif, 5 May 2004
Packaging

More research is required to identify best packaging system for Afghan horticulture products

Recommendations for improved quality:
- Better sorting/grading in the field
- Test new packaging options with all actors of the supply chain
- Plastic crates for national market could reduce post-harvest waste – plastic crates can be used several times and thus recollection need to be organized
Packaging

Carton packages is also a mean for traders to advertise for their products

Wooden Crates - other design

Tehran, 6 August 2004

Carton Packages near an orchards at harvesting time

Tehran, 21 July 2004

Trader’s Name and Contacts

Tehran, 21 July 2004
Improved packaging opportunity needs to be explored through field research

Plastic packaging for dried products:

- Simple technology
- Low cost equipment (between 2,000 and 15,000 US $)
- Can be used for packaging all type of dried products
- Plastic for packaging can be imported from neighboring countries at low cost
- Up to 25% added value on products and possibility to promote Afghanistan as a « brand »

Packaging unit for all types of dried products (raisin, apricot, chips, cumin, etc..) that is adapted for quality local market

Malayar, Iran, 2 August 2004
### Cold Storage

#### Rationales

<table>
<thead>
<tr>
<th>STORAGE RATIONALES</th>
<th>OPPORTUNITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIVATE storage are installed to benefit from business opportunities resulting from price differential between the harvesting season and later months</td>
<td>Afghanistan benefit from counter-season opportunities with Pakistan lowland for fresh vegetables and fruits (Pakistan is earlier in production)</td>
</tr>
<tr>
<td>PUBLIC cold storage are installed when marketing the existing horticulture fresh products is difficult due to surplus production</td>
<td>Best windows of opportunity for storage of fresh vegetables and fruits in Afghanistan should take place at the end of the season in highland locations in order to benefit from good market opportunities in winter before Pakistan lowland enters into production</td>
</tr>
<tr>
<td></td>
<td>Current production level is too low for public cold storage (annex module 1)</td>
</tr>
<tr>
<td></td>
<td>There are no significant surplus of Afghan horticulture products that justifies public cold storage</td>
</tr>
</tbody>
</table>
**MARKETING CHAIN**

**Fresh products – Short shelf life**

**Stone fruit, tomato, okra eggplants**

Farmers bring products in the wholesale market during harvest

**Commission Agent**

**Retailers**

**OPPORTUNITIES**

- Price of short shelf life products are volatile
- Cold storage in Pakistan does not reduce price volatility in the fresh market and do not allow to reduce significantly losses in wholesale markets
- Interest express by Afghan traders for cold storage is for speculative use
- Volume traded in Afghanistan is low and counter-season opportunities with Pakistan

**ACTORS**

- Commission agents are taking a 5-15% commission on products prices between farmers and retailers
- Farmers are paid by the commission agent after the products are sold to retailers - the capital of the commission agent is not at risk
- The rate applied by the commission depends on the offer: when offer is high (production peak), the commission agent have more difficulty to find retailers to buy the products and therefore commission agent increase their commission (while the price of horticulture products drops)
- Commission agents have therefore limited interest in storing product
Cold storage
Private storage - Long and Medium shelf life products

The main opportunity for cold storage in Afghanistan today is Apple, storage of other long shelf life fruits/vegetables can be extended with improved ventilated storage.

<table>
<thead>
<tr>
<th>MARKETING CHAIN</th>
<th>OPPORTUNITIES</th>
<th>ACTORS</th>
</tr>
</thead>
</table>
| **Fresh products – Long & medium shelf life** | - Storage of potato, onion, carrot can be extended by 2-3 months and apple by 1-2 months with well designed ventilated storage facilities (CELLARS)  
- The main opportunity for cold storage is APPLE for sale in spring/early summer – yet harvesting practices need to be improved for cold storage to be successfully used (apples in a orchard are harvested at once and generally too mature for long storage)  
- For export of grapes, cold chain from the field to international market need to be developed  
- The implementation of COLD CHAIN should be viewed as a mid-term objective given the quality constraints of horticulture products and the logistic challenges (road, energy, etc)  
- Some fresh products such as pomegranate or melon may be exported without a cold chain | - Traders are generally buying the products in the field and organize themselves the harvest, packaging and transportation  
- Storage of fresh products is generally done by traders but also by farmers  
- Cold storage can interest traders & businessmen while improved ventilated storage can interest farmers |
| **Onion, Potato, Carrot, Grape, Apple, melon** | **Farmers sells their crop in the field (sometime in advance)** | **Trader** |
|  | **Retailers** | **Trading Partner in Pakistan** |
Cold storage
Opportunity – Private Cold Storage

Adding a cold rooms to existing ice factory is the first step toward development of cold storage in Afghanistan through the private sector

### Add cold rooms to existing ice factory existing

- Low investment but low volume stored (~ $70,000 for 350 m3 of storage space as seen in Jalalabad)
- Owners of ice factory already have good knowledge of cold storage machinery & equipment and have established contacts with manufacturers in Pakistan
- Seasonal complementation can be prospected (ice mostly produced in Summer while storage of apple is stored in autumn/winter/spring
- 2 to 3 rooms per cold stores; as apple rooms are emptying in spring other imported exotic fruits from Pakistan in spring and local short shelf life fruits & vegetables (and diary products) in summer can be stored
- Location: high elevation (e.g. Kabul city) where long storage apple - Golden and Red Delicious - are harvested and where energy requirement for cooling (running cost) is low due to mild climate
Quality Driven Market
Opportunity

Quality of horticulture products means added value for Afghanistan

Quality Horticulture Products

- Substitution to imports on the national market
- Leverage value for national and export markets

Potential Customers

- Restaurants
- Hotels
- Catering services
- International organizations
- Upper-class Afghans
- Expatriates community
- High-end consumers

Dubai, 7 July 2004
Quality Driven Market
Supply chain

Supply chain integration is key for the horticulture segment to meet customers’ expectations

Current marketing channels

FARMERS

TRADER / COMMISSION AGENT

RETAILERS

CONSUMERS

- Traders and commission agents are little concerned by quality control as sorting is done by retailers
- Little care during packing and transportation
- Farmers do not have incentive to increase the quality of their products

Quality driven market

FARMERS

QUALITY PRODUCTS DISTRIBUTOR

CONSUMERS

- Requirements from the consumer side are directly passed on to the farmers by the distributors
- Distributor optimizes logistics and transport conditions
- Farmers are given incentive from the distributor to enhance the product quality
There is a sizeable demand for quality products in Afghanistan

<table>
<thead>
<tr>
<th>Service</th>
<th>Market Segment</th>
<th>Size of Segment</th>
<th>Consumption habits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality retailer store (Kabul)</td>
<td>Higher social classes of Afghan society including returnees</td>
<td>100,000 people</td>
<td>Choice of quality products from existing retailers</td>
</tr>
<tr>
<td></td>
<td>Expatriates and returnees</td>
<td></td>
<td>Imports from neighboring countries</td>
</tr>
<tr>
<td>Business-to-business service</td>
<td>Catering and dining</td>
<td>3,000 meals / day</td>
<td>Processed foods imports (e.g. juices)</td>
</tr>
<tr>
<td></td>
<td>Wedding halls</td>
<td></td>
<td>Choice of quality products from wholesale market</td>
</tr>
<tr>
<td></td>
<td>Armies and international organizations</td>
<td>35,000 people</td>
<td>Imported fruits and vegetables</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Imports only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Issue with food safety and supply policy</td>
</tr>
</tbody>
</table>
### Prestigious food suppliers have expressed their need for quality fruits and vegetables supplies

**Expressed requirements**
- Food safety
- Traceability
- Regular supply
- Good taste
- Shape (calibration)

**Serena Hotel – Kabul**
- Opening in December 2004
- Plans on opening 3 restaurants & lounges – 235 seats
- Project to assist in the development of small and medium agribusiness enterprises in coordination with AKDN
- “Sourcing our fruits and vegetables from Dubai or Pakistan are just a short-term solution. (...) Economically, we are more interested in Afghan quality products”. **Saleem Basaria, Financial Controller**

**Servall – Kabul**
- Catering to embassies and organizations for the last 2 years
- Around 1,000 meals served a day
- “When we need good quality fruits and vegetables, we have to spend US$ 1.5 a Kg on just transportation (for example apples from Europe)”. **Led Trajico, General Manager**
# Quality Driven Market Implementation

<table>
<thead>
<tr>
<th>Supplies:</th>
</tr>
</thead>
<tbody>
<tr>
<td>From wholesale market as a start</td>
</tr>
<tr>
<td>Directly from selected producers in a longer term</td>
</tr>
<tr>
<td>Better quality control</td>
</tr>
<tr>
<td>Deal with bigger volumes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partnerships with farmers or cooperatives</td>
</tr>
<tr>
<td>Optimized logistics (adequate transportation, storage facility…)</td>
</tr>
<tr>
<td>Quality control (traceability, hygiene)</td>
</tr>
<tr>
<td>Product processing (cleaning, sorting, grading, packing…)</td>
</tr>
<tr>
<td>• Nicest aspect for fresh consumption</td>
</tr>
<tr>
<td>• Lower quality aspect for restaurant’s cooking</td>
</tr>
</tbody>
</table>

At first pick and choose from the existing market, then integrate the procurement chain.
This opportunity requires reasonable investments and brings quick return on investment.

### Activity sizing assumption
- Quality retailer shop
  - 5% penetration rate
  - US$ 0.5 to 1 million revenue
- B2B customers:
  - 30% penetration rate
  - US$ 0.2 to 0.5 million revenue
- Total volume handled 200 tons a month
- Total revenue US$ 0.7 to 1.5 million

### Investment
- Facilities rented (no investment)
- Facilities setup, refrigeration
- Pick-up trucks for sourcing and deliveries
- Re-usable crates
- Order of magnitude US$ 100,000

### Cash flow
- Retailer margin represents $30,000 to $50,000 a month
- Enough to cover rent and HR
Quality Driven Market
Implementation – expanded scope of action

Closely related activities can optimize product chains and offer integrated services to the customers

- **Combination with other quality goods for more complete product panels**
  - Dried products
  - Herbs and spices
  - Dairies
  - Meat

  Higher sophistication of the cold chain
  Food safety issues

- **Extension of the products availability seasons**
  - Encourage farmers to implement plastic tunnels or green houses
  - Imports of counter-season and non-regionally available products

- **Use of remaining produce in small-scale processing**
  - Juices
  - Marmalades

  Sales at the quality store

- **First step towards targeted exports**
Fair-trade and organic markets

Afghan products could be successfully marketed as fairtrade
Certification for organic markets remains an issue

**Fair Trade products**
- Strong growth in Western countries
- Focus on small production units
- Certification for dried fruits and nuts under study by FLO (Fairtrade Labelling Organization)
- Afghanistan brand in the context of reconstruction
- Examples: targeted products for Niche / high added value products e.g. sun dried tomato
- Constraint: products have to be made by a cooperative

**Organic Products**
- Traditional farming in Afghanistan is close to organic
- Certification an issue
## Conclusion

The horticultural sector has a high potential if some major issues are tackled as a priority.

### Strengths
- Afghanistan benefits from a **climate** suitable to **high quality fruits and vegetables**.
- Some **fruit varieties** have international interest for their quality (pomegranates, apricots, almonds, raisins)
- **Low irrigation cost**
- **Low labor cost** in rural areas

### Weaknesses
- Investment in horticulture is **mid/long term**
- Lack of confidence in mid-term investment in insecure rural Afghanistan
- Lack of know how (technical, marketing, food safety)
- **Poor infrastructure**

### Opportunities
- Market perspectives for Afghan horticultural products are increasing with **expanding local and regional markets** (see Phase 1)
- **Experience and research applicable in neighboring countries** (example: Iran) and other dry countries
- **Capital inflow** from the diaspora and informal economy

### Constraints
- Need to create a “**business-friendly**” environment (security, insurance, credit, etc.), a **mentality of relationship** vs short term in business in Afghanistan
- Restore Afghanistan as a **brand name**, reinforce quality / reliability, promote export initiative
- **Logistics issues** (transportation, power supply) need to be addressed
Conclusion

The horticultural sector bears many opportunities for Private Investors

**Strengths**
- Substantial production of some products (ex: Grapes, Melon)
- Availability of quality products
- Low labor cost in production areas
- Growing entrepreneurial mindset within the business community
- Afghanistan and its neighbors are fast growing markets

**Weaknesses**
- Bottlenecks at many steps of the supply chain (production, distribution)
- Lack of volumes for most horticultural products
- High cost and unreliability of logistics/infrastructure

**Opportunities**
- New markets, ex: Quality driven market
- Public support
- “First Mover” advantage

**Constraints**
- Access to credit / insurance
- Necessity to invest in staff training
- Need to design and implement quality processes
- Need to conduct proper marketing and get in touch with final buyers to have a better hold of the markets
ANNEX I

Land Tenure Issues
Land Tenure
Farm Size

Afghanistan is characterized by small land holders interested in high value commercial crops

- Land tenure in Afghanistan is characterized by small holding - Farms with irrigated land manage an average of 3.24 Ha under irrigation
- Nearly 70% of the farms have less than 5 hectares and typically control 1.14 hectares of irrigated land and 0.5 hectares of rain-fed land
- Nearly 70% of all farms reported not covering their wheat needs and do not market surplus due to too small land holdings

- Nearly 70% of the farms (~730,000 farms) are too small to achieve self-sufficiency and are pro-actively interested in higher value commercial crops than wheat

Land Tenure

Farm Size

There is also a concentration of land in the large farm-size groups offering opportunities for orchards establishment on small and large land holdings.

- Although Afghanistan is characterized by small land holding, there is a significant concentration of land in the larger farm-size groups. A mere 6.5% of farms, with area over 20 hectares of arable land, concentrate about 33% of the irrigated land and 50% of the rain-fed.

- Commercial orchards can be established in small and large land holdings.

## Land tenure

### Land Ownership

Observations in various regions showed that the complex land ownership situation did not hamper the establishment of orchards.

<table>
<thead>
<tr>
<th>Land ownership and land access rights in Afghanistan are very complex, and the long period of war and political instability has further complicated the land tenure system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>At any given time, a single farmer may be owner, tenant, sharecropper and mortgagor – and may be in transition from one status to another with respect to one or more of his plots.</td>
</tr>
<tr>
<td>The distinction between owning land and holding land (occupying and using it) should be made clear – surveys only express land holding as reported by interviewees.</td>
</tr>
<tr>
<td>However, development of fruit orchards observed in some provinces in the past 25 years shows that land ownership issues did not limit orchards plantation (e.g. Wardak had hardly no orchards – 61 ha in 1992 according to FAO 1992 Landcover atlas - while now entire valleys have been planted with apple trees).</td>
</tr>
</tbody>
</table>

---

**Land tenure**

**Access to Irrigation Water**

---

### Reduced access to irrigation water may limit horticulture development in some watersheds

- Water availability in Afghanistan compares favorably with Central Asian republic and Iran; 2,480 m³/head/year in Afghanistan and 1,430 m³/head/year in Iran

- Water availability for irrigation purposes is a function of the seasonal variation of stream flow where no water is stored in reservoirs

- Water shortage during the drought in the southern part of the country in particular has badly affected orchards (but also in Baluchistan/Pakistan)

- Access to irrigation water is insecure at the tail of irrigation scheme in some regions such as Northern or Western Afghanistan

- Under-ground water resources are already over exploited in some regions (Kandahar, Ghazni) or have limited potential in others due to salinity as in Northern Afghanistan

- Western region (Herat) may have potential for development of irrigation using ground-water

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### Water insecurity may limit horticulture development in some watersheds such as in Northern (Balkhab, Sari Pul, Shirin Tagab) and Western (Farah Rod, Adraskan Rod) Afghanistan

- Important potential for water reservoir development for irrigation exists in most watersheds

- Potential for further irrigation development using under-ground water is limited

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ANNEX II

Trade Agreement Afghanistan-India and Credit Institutions
The terms of the trade agreement between Afghanistan and India is a strong incentive to Afghan horticulture exports given the applied rate of duty taxes

<table>
<thead>
<tr>
<th>No</th>
<th>Product Description</th>
<th>MFN Duty %</th>
<th>M O P*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Green Raisins</td>
<td>105</td>
<td>50%</td>
</tr>
<tr>
<td>2</td>
<td>Green Large</td>
<td>105</td>
<td>50%</td>
</tr>
<tr>
<td>3</td>
<td>Black Raisins</td>
<td>105</td>
<td>50%</td>
</tr>
<tr>
<td>4</td>
<td>Red Raisins</td>
<td>105</td>
<td>50%</td>
</tr>
<tr>
<td>5</td>
<td>Dried Apricots Nuts</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>6</td>
<td>Dried Apricots</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>7</td>
<td>Fig Dried</td>
<td>30</td>
<td>100%</td>
</tr>
<tr>
<td>8</td>
<td>Pistachios closed Shell</td>
<td>30</td>
<td>100%</td>
</tr>
<tr>
<td>9</td>
<td>Pistachios Open Shell</td>
<td>30</td>
<td>100%</td>
</tr>
<tr>
<td>10</td>
<td>Pistachios Shelled (Kernel)</td>
<td>30</td>
<td>100%</td>
</tr>
<tr>
<td>11</td>
<td>Walnuts Unshelled</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>12</td>
<td>Walnuts shelled</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>13</td>
<td>Plums Dried</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>14</td>
<td>Almond Thin Shelled</td>
<td>Rs. 65/Kg.</td>
<td>50%</td>
</tr>
<tr>
<td>15</td>
<td>Almond Hard Shelled</td>
<td>Rs. 65/Kg.</td>
<td>50%</td>
</tr>
<tr>
<td>16</td>
<td>Almond Shelled</td>
<td>Rs. 65/Kg.</td>
<td>50%</td>
</tr>
<tr>
<td>17</td>
<td>Mulberries Dried</td>
<td>30</td>
<td>100%</td>
</tr>
<tr>
<td>18</td>
<td>Pine Nuts Toasted</td>
<td>30</td>
<td>100%</td>
</tr>
<tr>
<td>19</td>
<td>Raisins Golden</td>
<td>105</td>
<td>50%</td>
</tr>
<tr>
<td>20</td>
<td>Apricots Nuts, Bitter Unshelled</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>21</td>
<td>Apricots Nuts, Bitter Shelled</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>22</td>
<td>Green Raisins except Large</td>
<td>105</td>
<td>50%</td>
</tr>
<tr>
<td>23</td>
<td>Cherries Sour Dried</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>24</td>
<td>Grapes fresh, All types</td>
<td>40</td>
<td>50%</td>
</tr>
<tr>
<td>25</td>
<td>Melon fresh</td>
<td>30</td>
<td>100%</td>
</tr>
<tr>
<td>26</td>
<td>Apples fresh</td>
<td>50</td>
<td>50%</td>
</tr>
<tr>
<td>27</td>
<td>Apricots fresh</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>28</td>
<td>Pomegranates</td>
<td>30</td>
<td>50%</td>
</tr>
</tbody>
</table>

* Margin of Preference for Afghanistan horticulture products

The preferential trade agreement signed in March 2003 between Afghanistan and India is a strong incentive to Afghan horticulture export given the current duty taxes rate applied to other countries.

Yet, given the low production level, the quality concerns over fresh products, the logistic constraints and the time required for orchards to enter production, these opportunities cannot be taken by Afghan producers.

Source: [http://commerce.nic.in/india_afghan.htm](http://commerce.nic.in/india_afghan.htm)
Credit institutions

Various private investment funds and governmental organizations support private sector SME projects through financial and insurance services

<table>
<thead>
<tr>
<th>AISA - Afghan Investment Support Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – stop shopping for investors</td>
</tr>
<tr>
<td>Attract, promote and register all new investments in Afghanistan</td>
</tr>
</tbody>
</table>

**Main insurance services**

- **MIGA – Multilateral Investment Guarantee Agency**
  - Part of World Bank
  - Programs about to be launched in Afghanistan

- **OPIC – US Overseas Private Investment Corp**
  - Political risk insurance and loan guarantee services

**Main national governmental funds**

- **USAID – RAMP / Afghanistan International Bank**
  - 3 year-loans program ($50,000 - $500,000) for agribusiness projects expected soon

- **CNFA – AADP Project (USDA)**
  - Grant program agribusiness projects ($500 - $50,000)

- **EDFI – EU Development Finance Institutions**
  - Group of 13 European national institutions (e.g. German DEG, Dutch FMO, UK’s CDC, French PROPARCO…)

- **OPIC – US Overseas Private Investment Corp**
  - Loans services ($0.1 M - $2 M). Invested in Hyatt project

**Main multinational entities**

- **ADB – Asian Development Bank**
- **EIB – European Investment Bank**
- **IFC – International Finance Corporation**
  - Part of World Bank. Financed Kabul Serena Hotel
  - Finance up to 25% of project costs

**Main private funds**

- **ACAP – Afghanistan Capital Partners**
  - Focus on $500,000 – $5M projects

- **Afghanistan Investment Partners**
  - Financed Hyatt Hotel and AIB through ARC

- **Aga Khan Fund for Economic Development**
  - Financed Kabul Serena Hotel
Contacts

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