

Universidad Popular Autónoma del Estado de Puebla

Centro Interdisciplinario de Posgrados

Investigación y Consultoría

Departamento de Ingenierías

Maestría en Agronegocios

## “Business Plan ATI Farmer’s Cooperative”

Tesina que para obtener el Grado de Maestro  
en Agronegocios

Presenta

Jesús Antonio Espinosa Cruz



**UPAEP – Secretaría General**

Dirección General de Apoyos Académicos

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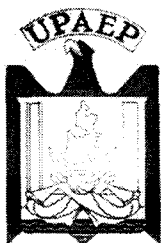
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Por este medio nos permitimos informar a Uds. la aprobación de la Tesina:  
"Business Plan ATI Farmer's Cooperative", que presenta el alumno: Jesús Antonio  
Espinosa Cruz (39500015), como requisito para obtener el Grado de Maestría en este  
programa académico.

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Febrero de 2011.

## **Agradecimientos**

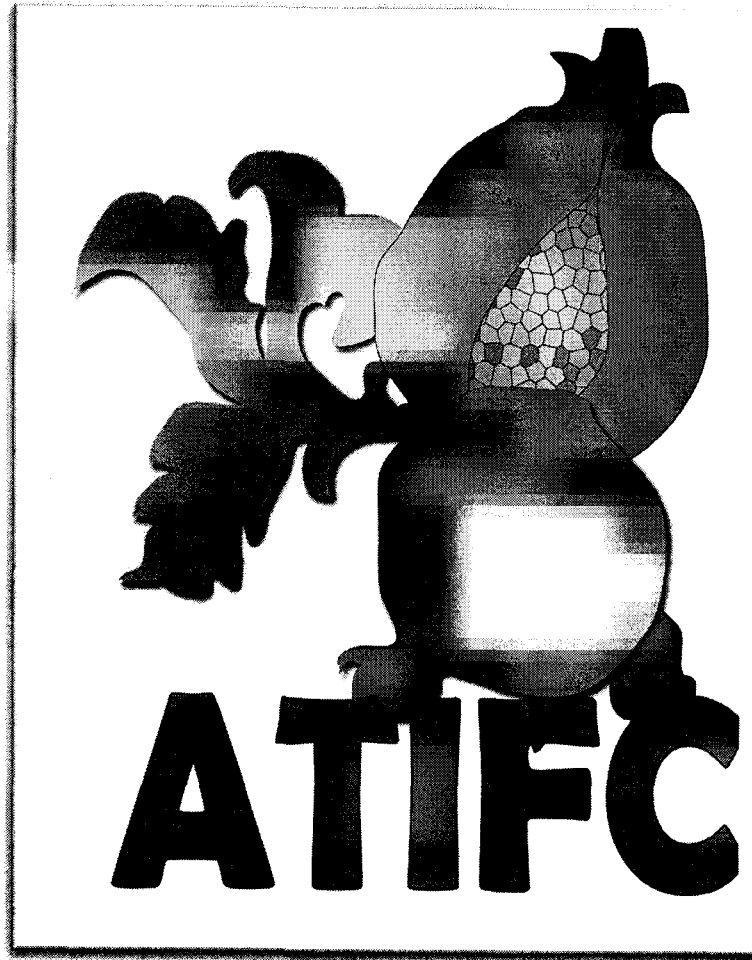
**Es importante mencionar que este trabajo fue realizado durante mi estancia en Oklahoma State University. Fue un proyecto realizado en equipo que culminó en un excelente Plan de Negocios. Sin embargo, fueron más las enseñanzas aprendidas durante las reuniones en la biblioteca o en casa de Sadique. La convivencia diaria, las discusiones y hasta los tiempos libres en la mesa de pool, son los que hicieron al equipo llegar a buen término el proyecto.**

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**Business Plan**  
**ATI Farmer's Cooperative**



Sadique Akhtar  
Jesus Espinosa-Cruz  
Jeremey Wilson

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## I. Executive Summary

Anuppur, Tikamgarh, and Ichhawar Farmer's Cooperative will be registered as Cooperative Society under the Multi State Cooperative Society Act of 2002. ATIFC will begin its operation in January 2011. During the startup of cooperative, membership will number approximately 500 farmers. The society will act as a marketing and business organization for small and medium pomegranate growers. The Cooperative will provide services to pomegranate growers that will enable them to increase productivity, such as, training and education of intercultural and post harvest management practice. Possible areas of future expansion are input procurement and distribution.

ATIFC will be headquartered at Bhopal, the capital city of Madhya Pradesh State (India). ATIFC will have a board of directors comprised of elected cooperative members. ATIFC will employ a team of 18 experienced professionals with expertise in business and marketing, food processing and agriculture. The cooperative will have three branch offices each located at the production locations Anuppur, Tikamgarh and Ichhawar. Each branch office will provide services to their farmer members in production and management of orchard through training, exposures, and field demonstrations. Branches will also function as procurement centers for the pomegranate. Sorting, grading, packaging and transportation will be the initial function that each location will perform. Sheds, as per the APEDA's guidelines, will be constructed in each location for grading, sorting and packaging.

ATIFC will have no direct competition in Madhya Pradesh. Currently pomegranates are produced and marketed mostly from two states, Maharashtra and Karnataka (87%). The product is a superior quality pomegranate variety, Bhagwa also known as Red Diana. This is a high quality cultivar with desirable characteristics such as red colored skin, dark rose colored seedless arils and sweet taste. These attributes of the Bhagwa (Red Diana) variety has made it more popular than other varieties.

The pomegranate will be graded in two grades of pomegranate A and B, one with weight greater than 350 gm (export quality) and less than 350 gm. It is expected that 40% of the total procurements will be sold to the registered exporters of APEDA and the rest (60%) will be sold domestically to retail chains and farmers' markets. ATIFC will sell the pomegranates under the brand name of "RUBY POMS". The production is estimated to increase every year for 8-10 years and then will be constant during its expected life of 25 years.

ATIFC projects sales to grow at a rate of 13% per annum over 10 years. Also, the net present value of ATIFC is \$872,587 over 10 years using a discount rate of 12 %. Internal rate of return for the same period is 66.2%. Return on assets and return on equity are 75% and 38% respectively over 10 years. Member dividends are expected to triple within the first five years of sales.

To start business operations, total funding required is \$288,581. The cooperative will require financing (short and long-term) in the amount of \$181,414. These funds will be used to establish infrastructure, pay salaries as well as other operational expenses. The balance of the capital requirement will be met through member investments and grants.

## II. General Company Description

### a) Legal Name and Form of Business

ATIFC will be registered as Cooperative Society under the Multi State Cooperative Society Act of 2002. The society will act as a marketing and business organization for small and medium pomegranate growers. The Cooperative will provide services to pomegranate growers that will enable them to increase productivity, such as, training and education of intercultural and post harvest management practice. Possible areas of future expansion are input procurement and distribution.

### b) Mission and Objective

The mission of Anuppur Tikamgarh Icchawar Farmers' Cooperative (ATIFC) is to increase the incomes of small and medium land owners through sustainable diversification of agriculture. The cooperative will provide services at the technological frontier of production, utilizing value added post harvest management practices as well as facilitating efficient marketing strategies.

The primary objectives of ATIFC are:

- Increase the number of producer members to one thousand by the end of 2020 bringing 1000 acres under pomegranate production in three locations of Madhya Pradesh.
- Capture 1.2% of export market of pomegranate from India by 2018 and 1% of the domestic market by the same period.
- Increase the dividend paid to farmers by 200% from 2011-2015 through collective action in production, procurement and marketing thereby achieving economies of scale.
- Provide suitable and efficient technology for post harvest management of pomegranate to maintain quality, increase shelf life to a minimum of 60 days and reduce post harvest losses up to 75%.
- Diminish the number of intermediaries between primary producer and customers up to three levels. This will be realized through price and volume negotiation with buyers and institutional marketing mechanisms.
- Ensure quality control of agriculture product through certification from Agriculture and Processed Food Export Development Authority (APEDA).
- Marketing objective is to enter into long term contracts with exporters and retail chain outlets and maintain continuity of business.

Business Philosophy: Provide fresh, safe and high quality pomegranate fruit to consumer at competitive prices.

### III. Products and Services

The product is a superior quality pomegranate variety, Bhagwa also known as Red Diana. This is a high quality cultivar with desirable characteristics such as red colored skin, dark rose colored seedless arils and sweet taste. This variety is different from the previous varieties because of its sweet taste compared to tangy taste, high extraction rate and seedless arils compared to moderately hard seeded arils available in most of the other varieties in India (see Appendix II).

These attributes of the Bhagwa (Red Diana) variety has made it more popular than other varieties. The production of this variety has been taken in other States such as Maharashtra. Sellers and plant breeders claim this variety to have greater preference both in the international and national market.

The competitive advantage of this product lies in its quality and attribute which makes it a popular variety than other varieties such as Ganesh, Arakta, Dholka, Bedana etc. Not only is the appearance attractive, but it provides higher calories and better taste than other varieties because of its higher extraction rate, less acid content and high brix percentage.

ATIFC will also provide technological knowhow through education and training of farmers to improve the level of production and management of orchard. ATIFC will achieve this mission through collaboration of Agriculture Universities, Research Institutions and Established Farmers' Cooperative.

## IV. Marketing Plan

### a) Industry Analysis and Trend

Pomegranate is grown commercially primarily in two states, Maharashtra and Karnataka. Small scale plantations are also seen in other states such as Andhra Pradesh, Gujarat and Tamil Nadu. The figure below gives the details of Pomegranates production by States:

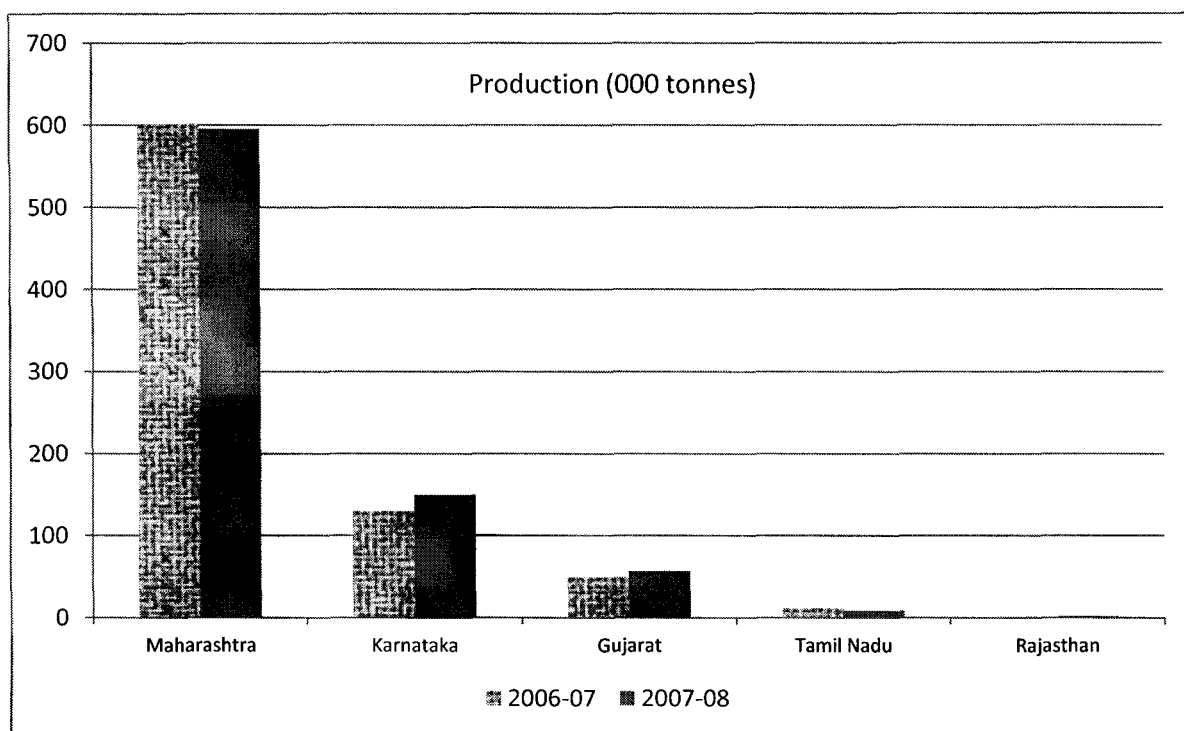


Figure 1: Production of Pomegranate by States

Eighty seven percent of the total pomegranate production comes from two states Maharashtra and Karnataka and rest from other states like Gujarat, Tamil Nadu and Rajasthan. Almost 67% of the pomegranate is produced is consumed domestically and merely 1% is exported. The rest (30%) is lost due to inadequate infrastructure. The total export of pomegranate has gone up by 46% from 2006-07 to 2008-09 recording a total revenue increase of USD 24.92 million from 17.65 millions in the same period (an increase of 41%).

Indian pomegranates in the last two years have gained popularity among the different importers which include European nations such as Belgium, Germany and the

Netherlands and reducing their dependency on Gulf countries which are the major importer of pomegranates.

According to a project report the Food Corporation of India submitted to UNCTAD in 2007, the estimated area under of pomegranate production is projected to increase 6 times the present area of 0.57 million ha and exports will increase 7 fold by 2025.

From the domestic market point of view, a research conducted by Azad and Sikka (1991) reveals that per capita fruit consumption was 30 kg and the demand projection revealed that the per capita consumption will increase to 36 kg resulting from increasing per capita income and changing diet. They calculated the income elasticity for different fruits that ranged from 0.11 to 1.31 implying that increasing income is positively correlated with fresh fruit consumption. On a larger scale, they found that fruit consumption is around 8-10 million tonnes for urban populations residing near Delhi alone.

Therefore pomegranate production is well positioned to take advantage of significant opportunities posed by limited production in a few states and expanding export and domestic demand. India is one of the fastest growing economies in the world with growth rate of almost 7%. With growing per capita income and changing diet, it is expected that people will change to a more diverse and healthy diet which will increase the demand of fruit.

With these trends in mind, the ATIFC will concentrate on production and marketing premium quality pomegranate to exporters and to domestic consumer through retail chain and Farmers' wholesale market (Mandis).

## **b) Target Markets**

### **1. Domestic Market**

The cooperative will target those markets having low supply and high prices. The cooperative will target metropolis areas such as Delhi, markets of Chandigarh, Haryana, adjacent states such as Chattisgarh and Rajasthan. These markets were selected based on the average wholesale price of pomegranates.

The markets stated above are cities with higher incomes in India. Moreover, the road and rail infrastructure are well established and therefore will have advantage in the shipment of produce (Appendix-III, IV). Due to increasing economic activity in these locations, about 96% of the population is employed in these regions and have high

disposable income. For example, Delhi is the second largest metropolis by population having per capita income of about USD 1450 which is second largest in India.

The wholesale price of pomegranate in these regions is very high compared to other states like Gujarat and Maharashtra which range from USD 688 per tonnes to 879 per tonnes (estimated from NHB Database, 2008).

## **2. Export Markets**

The cooperative will also focus on selling its product to the registered exporters of APEDA who export to UAE and specifically to European markets. The section under the competition section gives the details of the present status in the market. There are more than 100 registered exporter of pomegranate in Madhya Pradesh (Appendix-VI). The minimum price of pomegranate provided by APEDA is USD 674 per tonnes. This will be the initial strategy to reduce the capital investment and price variability. Once the production volume increases and credibility is established, ATIFC will export on its own.

### **c) Competitive Position**

#### **1. Global Competition**

The main global competitors in pomegranate exports are Iran and Spain. Spain is the major supplier in European market that captures about 95% of the European market (Inma Agribusiness report, 2007). Iran is another competitor which supplies pomegranate to European Markets. Recently Iran focused its attention to supplying pomegranate concentrate and juice by establishing 11 concentrate juice processing plants.

Afghanistan, Azerbaijan and Uzbekistan are the new entrants in the international market. Afghanistan exported 670 MT of pomegranate to UAE, a major importer of India's fresh pomegranate fruit. Azerbaijan is mainly competing with Iran on concentrate juice prices whereas Uzbekistan is primarily targeting Russian Markets.

#### **2. Domestic Competition**

Maha Anar is the leading giant pomegranate marketing cooperative in Maharashtra. The total area owned by Maha Anar is 40000 hectares with more than 3000 members. This organization has its own cooling and export infrastructure. The major destinations of its product are countries located in the Middle East and the Netherlands in Europe. The total export data is not available on their website.

Another Competitor is the Karnataka Pomegranate Growers Association which is functioning under the umbrella of Karnataka State Agricultural Produce Processing and Export Corporation (KAPPEC).

| States         | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEPT | OCT | NOV | DEC |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|
| Gujarat        |     |     |     |     |     |     |     |     |      |     |     |     |
| Andhra Pradesh |     |     |     |     |     |     |     |     |      |     |     |     |
| Karnataka      |     |     |     |     |     |     |     |     |      |     |     |     |
| Maharashtra    |     |     |     |     |     |     |     |     |      |     |     |     |
| Tamil Nadu     | NA  |     |     |     |     |     |     |     |      |     |     |     |
| Tripura        |     |     |     |     |     |     |     |     |      |     |     |     |
| Rajasthan      |     |     |     |     |     |     |     |     |      |     |     |     |

Figure 2: Timeline of production and harvest of Pomegranate

Seasonality in production of pomegranate in different states of India

 Lean Season 
  Peak Season 
  Year Round

#### d) SWOT Analysis

| Strength                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Good quality, sweet taste, soft seed, high extraction rate, and cultivars planted.<br><br>2. Differential growing season relative to major producer and exporter globally such as Iran and Spain and specific and more popular variety being produced domestically. | 1. Technical Barrier to trade (TBT) due to Sanitary and Phyto Sanitary Issues (SPS).<br><br>2. Weakness in addressing food safety Issues.<br><br>3. Weak Quality control and supply chain Management.<br><br>4. Very small share compared to other leading producer, those in Maharashtra and Karnataka. | 1. Obtaining EUREGAP through approved certification bodies which will pave the path to capture European Market.<br><br>2. Effective Quality control and supply chain management through improved infrastructure service such as cold storage and effective transportation using refrigerated Van<br><br>3. Establishment of strong residual monitoring system to meet the criteria for food safety by placing strong agriculture team at |

| Opportunities                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | production sites.                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Different harvesting season provides opportunity to export to European market.</p> <p>2. Good opportunity to grab the pomegranate export from MP state through strong collaboration with APEDA registered food exporter in MP since no export and domestic sale has started from the state.</p> <p>3. Specific product will give edge to customers who are interested in specific variety and consistent quality for purchase.</p> | <p>1. Loss of production due to Bacterial Blight caused by <i>Xanthomonas axonopodis</i> may lead to 100% severity in orchard. The disease is mainly caused due to improper drainage and heavy soil and biotic pathogens.</p> <p>2. Fruit rot, sun scald and fruit cracking, Internal breakdown of arils.</p> <p>3. Increased competition due to subsidized production from other players such as Spain, Iran etc.</p> <p>4. Competition from processed concentrate juice manufacturers such as Iran and Uzbekistan.</p> | <p>4. Best Management Practice through training program in collaboration with Agriculture Department and Universities and Pomegranate Research Institution.</p> <p>5. Adoption of pre and post harvest Management Practices will reduce the damage due to fruit rot, sun scald and fruit cracking.</p> <p>6. Mechanical Handling system will reduce aril damage of fruit.</p> |

**Figure 3: SWOT Analysis**

Based on the SWOT Analysis, the competitive edge with our product lies with high quality fruit and different seasonality in production. In Spain the harvesting continues from September to November after which it declines and similarly with Iran where harvesting decreases from December onwards. The production in MP is expected to start from December and continue till April and May. Therefore we can supply the produce through exporters when there will be little or no competition from the other international major exporters of pomegranate.

#### **e) Consumer Preference for Pomegranates**

A simple study on consumer preference of two most popular varieties during the summer 2009 was conducted in three different markets of Madhya Pradesh to estimate its demand and market share. The results suggest that if the variety with above stated characteristic were provided to consumer, they are willing to pay price premium of Rs 4 per kilogram of fruit relative to other variety (Ganesh which is another popular variety).

The Farmers cooperative will have a competitive edge because of following reasons:

- Good and high quality variety of pomegranate.
- ATIFC can also store the product in cold storage which could be sold during off season to realize high price.

- ATIFC expect to reduce operational costs by achieving economies of scale as per unit costs of production will be reduced with increasing production and sales.

The market analysis pie chart shown below reflects the total number of potential customers for ATIFC. ATIFC expects that 40% of the pomegranate will be sold to exporters, 30% will be sold to Retail chain and 20% in local farmers' market and rest to other retailers.

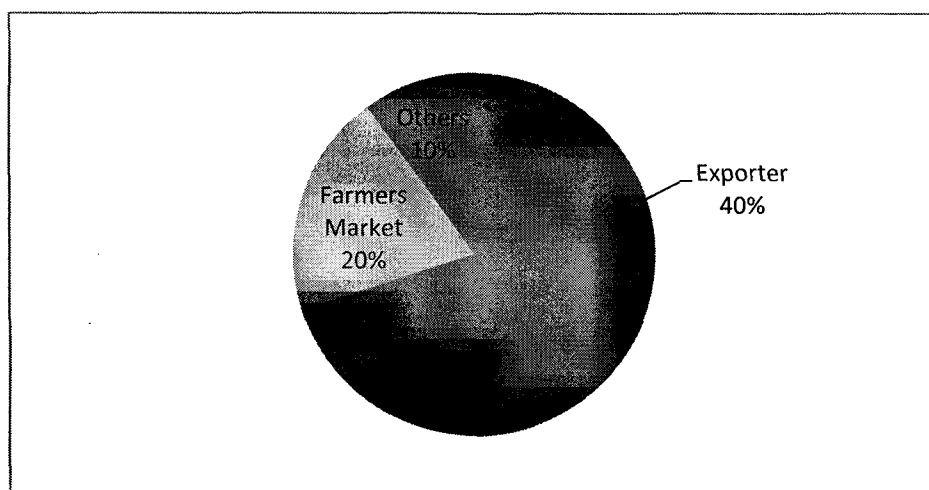


Figure 4: Expected Market Share Distribution

#### f) Sales Strategies and Promotion

The pomegranate will be graded in two grades of pomegranate A and B, one with weight greater than 350 gm (export quality) and less than 350 gm. It is expected that 40% of the total procurements will be sold to the registered exporters of APEDA and the rest (60%) will be sold domestically to retail chains and farmers' markets.

ATIFC will sell the pomegranates under the brand name of "RUBY POMS".

- For export grades, the Cooperative will market through the registered exporters of APEDA. There are more than 100 registered exporters of APEDA (Agriculture and Processed Food Product Export Development Authority) based in Madhya Pradesh. The cooperative will also market its product to retail chains such as Food World, Food Mart, Reliance Fresh, Subhiksha, Safal etc.
- Local consumer through local food retailer in fruit and vegetable market.
- Entering into contracts with fruit and vegetable exporters.

- Participation in trade shows organized by APEDA for product promotion, advertisement on farm publication and business magazine will be another strategy to promote the product.
- Advertizing in APEDA's website.
- Personal contacts with retail chains and mailing brochures to retail chains and exporters.

#### **g) Pricing**

The domestic pricing policy will be based on prevailing prices during the time of sales. ATIFC will sell the pomegranates domestically at competitive prices to retail chains and farmer's markets. The domestic sale price per tonnes used in calculations is estimated as USD 580.

The export quality pomegranates will be sold to exporters at the prices set up by APEDA. The current price per tonnes of export pomegranates if sold to APEDA registered exporters is USD 674 per tonnes.

## **V. Operational Plan**

### **a) Plants and facilities**

ATIFC is expected to be operational by January 2011. The operational plan includes:

- Establishment of three branch offices and headquarters.
- Establishment of shed and packaging house as per APEDA's guidelines.
- Obtaining equipment, furniture and fixtures, transport vehicles etc.
- Issue Delivery Share to farmer members which will also help to raise capital. This will also act as the contract between the farmer members to sell pomegranates and for the cooperative to purchase the pomegranates from the members.

### **b) Location and Geographical Information**

ATIFC will be headquartered at Bhopal, the capital city of Madhya Pradesh State (India). The location is strategically chosen because it is centrally located and highly networked with other states and cities via Railways, Airways and Roadways (Appendix-III, IV). The cooperative will have three branch offices each located at the production location.

- Headquarters at Bhopal
- One branch office at Anuppur
- One branch office at Tikamgarh
- One branch office at Ichhawar

Anuppur, Tikamgarh and Ichhawar are the production locations started during February 2007. Five hundred acres of pomegranate orchard were established under the crop diversification project with objective to increase the income of the small and medium land owners. One hundred acres of plantation is taken in Anuppur and 200 acres of plantation is taken in Tikamgarh and Ichhawar each.

Each branch office will provide services to their farmer members in production and management of orchard through training, exposures, and field demonstrations. The branch office will function as procurement centre for pomegranate. Sorting, grading, packaging and transportation will be the initial function that each location will perform. Special sheds as per the APEDA's guideline will be constructed in each location for grading, sorting and packaging.

### c) Production and Procurement Plan

The production is estimated to increase every year for 8-10 years and then will be constant during its expected life of 25 years. Although in the 3rd year of production, studies in the past suggested that the minimum yield (per acre) of pomegranate is 1 tonnes, but conservative estimates have been made with 75% percent of the maximum production. The estimated procurement in the 1st year is 775 tonnes, 906 tonnes in 2nd Year 1087 tonnes in the 3rd year, 1305 tonnes in 4th year and in excess of 1500 tonnes from 5th year onwards<sup>1</sup>.

The production and procurements estimates are based on assumptions that 40% (UNCTAD, 2007) of yield will be exported, and 60% will be procured and sold in domestic market. The table below gives the estimated production procurement estimates.

Table1: Production and Procurement Estimates

| Particulars                    | Unit   | 3rd<br>Year | 4th<br>Year | 5th<br>Year | 6th<br>Year | 7th<br>Year | 8th<br>Year |
|--------------------------------|--------|-------------|-------------|-------------|-------------|-------------|-------------|
| Total plantation area          | acre   | 500         | 500         | 500         | 500         | 500         | 500         |
| Yield per acre                 | KG     | 1512        | 1764        | 2520        | 3528        | 4536        | 4536        |
| Total procurement              | Tonnes | 756         | 882         | 1260        | 1764        | 2268        | 2268        |
| Grade A Pomegranates<br>(40%)  | Tonnes | 302.4       | 352.8       | 504         | 705.6       | 907.2       | 907.2       |
| Grade B Pomegranates<br>(60%)  | Tonnes | 453.6       | 529.2       | 756         | 1058.4      | 1360.8      | 1360.8      |
| Increase from previous<br>year | %      |             | 17          | 43          | 40          | 29          | 0           |

On average a thirteen percent increase in production, procurement and sales is estimated over a ten year time period.

### d) Quality control

In order to ensure the uniform supply of product, each producer member has to sign the formal agreement for selling the produce to ATIFC which will also be a part of stock purchase which will obligate the members to sell their produce to the cooperative.

---

<sup>1</sup> The 1<sup>st</sup> year of procurement and marketing is the 3<sup>rd</sup> year of production.

Minimum procurement price of USD 0.33 per kilogram of fruit will be provided to the producer.

### *1. Measuring sugar content*

Quality of fruit will be tested using refractometer based on the sampling of fruit from each plot (sugar content 16-17 brix). The extension workers will be trained to use the equipment for testing.

### *2. Residual test for food safety requirement and GAP criteria.*

To ensure that product is safe and of high quality it is essential to test the product for various parameters as desired by consumers and required by regulators of importing countries. The process of quality control and product testing for Food safety export testing and residue monitoring will be undertaken by APEDA recognized laboratories.

- Certification of AGMARK grading will be obtained by the Department of Marketing and Inspection (DMI) to ensure safe export quality pomegranate
- Each farmer will maintain the registration and pesticide application record as prescribed by APEDA under Annexure II (Appendix VII). This will be ensured by each of team located at production location under the guidance of Location In charge (LI).
- Ensure application of registered and recommended pesticides as per APEDA guideline (Annexure V).
- Residual tests will be performed by APEDA's recognized laboratories. Location Incharge (LI) and extension agents will visit farm plots at least two times prior to harvest, first at time of registration and second at time of sampling.
- The agriculture expert will examine the consolidated residue test report and based on the analysis of residue report will provide recommendation for corrective measure.
- Grading, Sorting, Packaging will be done on sheds which will be established as per the DMI and APEDA guideline. The fruits will be graded based on weight (King size: Above 500gm, Queen Size: 400-500gm, Prince Size: 300-400gm).
- Phyto Sanitary Certification: Required for shipping consignments. The phytosanitary certification authority will mark the representative sample drawn with lab test report.

### **e) Technology Plan**

All the locations will be computerized and will have internet access.

#### **Hardware need.**

- 10 high configuration computers will be needed, 4 of which will be needed at Headquarter and 6 will be needed at location level.

#### **Software need**

- Each location will have accounting software and will be equipped with MIS.

### **Telecommunication Plan**

- Each location will be connected with Telephone and Internet services

### **Equipment and Technology**

- Equipment such as a refractometer used to determine the quality of fruit and measure the sugar content of fruit, transport vehicles (pickup trucks), furniture, fixtures and office equipment.
- Six refractometers, two in each location will be required.
- 1 transport vehicle in each location will be required.
- Furniture and fixture will be required for office set up.
- Packaging material will be required.
- Rental Cold storage will be used initially for the purpose of storage at Bhopal level. The rental charges are USD 15 per tonnes for whole season.
- Refrigerated van will be needed to supply the commodity to exporter and other retailers.

### **f) Legal and Regulatory Issues**

- Registration of Cooperatives under the Multi State Cooperative Society Act (2002).
- Registration for 500 pomegranate farms for phytosanitary requirement and meeting Good Agriculture Practice (GAP).
- Obtaining certificate of authorization (CA) for grading, packaging and marketing for export from APEDA.
- Obtaining certificate of Ag Mark grading (CAG) for export by Department of Marketing and Inspection (DMI) which will ensure the safety and quality parameters.

### **g) Supply and Distribution**

- Each location will have staff of its own to monitor production, quality control, procurement, packaging and transport.
- Each location staff will visit the field and estimate the production.
- The cooperative will purchase the entire harvest from each farmer.
- After purchase, the produce will be sorted by quality to determine export amounts.
- Produce will be packed.
- After the fruits are packed every detail will be marked as per the specification of APEDA on the carton such as net weight, fruit count and stamp impression.
- The carton will then be ready for transportation either to cold storage or to the retailers or exporter.
- The Location In charge (LI) will closely monitor the procedure from harvesting, packaging and transport.
- A hub and spoke system would be utilized for the distribution of pomegranates. The shipment to a region would be collected in the primary hub, sorted, graded and packed and shipped to the central hub via rail transport, and transported to the final destination. This system is expected to work, because all the three locations are well connected to Bhopal via rail transport. Bhopal is centrally located and has the advantage of connection to other cities and states. Moreover, Bhopal is also the state capital, and has basic infrastructure facilities such as electricity and cold storage.
- The distribution from the central hub would be done via refrigerated trucks, or rail transport depending upon the demand from the buyers. For retail chain outlets and exports, transportation would be done via refrigerated trucks. To domestic whole sellers there is possibility to transport pomegranate via rail network.

### **h) Packaging and Palleting**

Packaging of fruit will be done in a corrugated box. The net weight of the packaged fruit will be about 4 kilograms. Although the number of fruit in one box depends on the size, one box can be filled by 10, 12 or 15 counts of fruits. (Appendix XII). For export purposes, palleting is required. One pallet contains 200 cartons which weigh approximately 800 kilograms (FCI report submitted to UNCTAD).

## **VI. Management and Organization**

### **a) Board of Directors**

Being a Cooperative there must be a Board of Directors. According to Cooperative Society Act (2002), the members of the cooperative have to elect the board members. The number of board members should not be less than 8 or exceed 21. Initially there will be 8 board members. The board will have a Chairman and a Vice Chairman who will be selected among the members of board. The Chairman and Vice Chairman will be paid annual remuneration for their services.

### **b) Advisory Committee**

The cooperative will have an advisory committee represented by members of Deputy Director of Agriculture and Horticulture, Marketing Cooperative Unions, Rural Development Department and Non Governmental Organization (NGO). The expected number of members in advisory committee is eight.

### **c) Management and Key Employees**

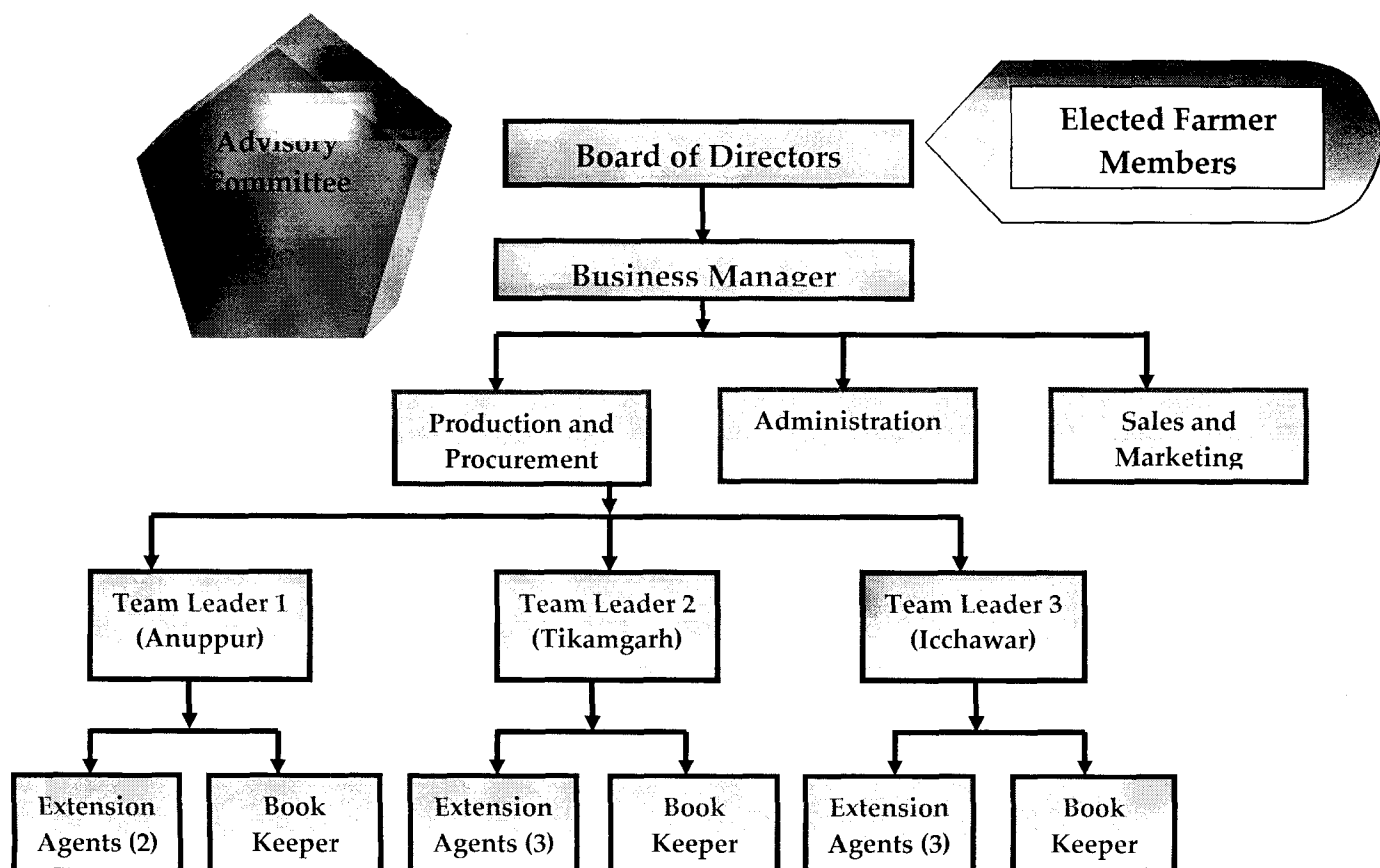
The ATIFC will be led by a full-time Business Manager with a minimum of 10 years experience in the management of Cooperatives. There will be 2 additional personnel; a Marketing Manager for promotion of the product and an Agriculture Food and Processing Engineer.

Each production location will be headed by one Agricultural Expert with a specialization in horticulture farming and management as Location In charge (LI). There will be three Location In charge (LI). The Location In charge will be responsible for the following tasks:

- To supervise at production, procurement, packaging and transportation. Supervising at production level means assisting farmers with meeting the minimum residue criteria for exports and providing safe food.
- Organizing training program during 6 month period for farmers to learn technical skills in horticulture and other agriculture.
- Ensure grade classification of pomegranate as per guidelines of APEDA and Department of Marketing and Inspection (DMI).

- Establish and ensure surveillance system for controlling residue of pesticides as per guideline National Research Centre for Pomegranates. Ensure that each farmer maintains field application records.
- To ensure system of corrective action in event of detection of higher residue level.
- Ensure registration of farmers plot for exports.
- Identification of new farmers who are interested in pomegranate farming.

Each Location In charge (LI) will be supported by Extension Agents (AE) who will help him organizing training, field survey to collect information on field status every month. There will be 2 extension agents in Anuppur, 3 in Ichchawar and 3 in Tikamgarh. Total of eight extension workers will be employed. Administrative and accounts issues will be taken care of by 3 bookkeepers and 1 accountant. The accountant will be Bhopal based (HO) while bookkeepers will be based on each production location. Overall there will be 18 employees in the Cooperative. The management will be responsible for supervising and participating in the daily operations.



## VII. Startup Expenses and Capitalization

### a) Startup Summary

ATIFC will function as an Agriculture Marketing Cooperative for Pomegranate Producers in three locations. During the startup of cooperative the minimum membership assumed is 500. The membership is expected to increase to 1000 by 2020.

### b) Capital Expenditure

#### *Plant Machinery and Equipment*

For acquiring special sheds, equipment, vehicles, and legal expenses such as registration fee, licensing and permits, total funding required is USD 159,999.

Table 2: Projected Budget for Plant, Machinery and Equipments

| <b><i>Plant Machinery and Equipments</i></b> |                                                 |                  |                |
|----------------------------------------------|-------------------------------------------------|------------------|----------------|
|                                              | Items                                           | Amt (INR)        | Amt (USD)*     |
| 1                                            | Refrigerated Van                                | 3,399,998        | 73,913         |
| 2                                            | Pickup Truck                                    | 2,400,004        | 52,174         |
| 3                                            | Furniture and Fixture                           | 211,922          | 4,607          |
| 4                                            | Computer, Printer, telephone and fax            | 290,996          | 6,326          |
| 5                                            | Equipments (Container for sorting, grading etc) |                  |                |
|                                              | Equipments for testing quality                  | 41,998           | 913            |
| 6                                            | Special Building                                | 999,994          | 21,739         |
|                                              | <i>Subtotal</i>                                 | <i>7,344,912</i> | <i>159,672</i> |
| <b><i>Legal, Licensing and Permits</i></b>   |                                                 |                  |                |
| 7                                            | Registration fee for Coop                       | 5000             | 109            |
| 8                                            | Registration for export                         | 5000             | 109            |
| 9                                            | Web Promotion                                   | 5000             | 109            |
|                                              | <i>Subtotal</i>                                 | <i>15,000</i>    | <i>327</i>     |
|                                              | <b>total</b>                                    | <b>7,359,954</b> | <b>159,999</b> |

*Fixed and Operation Overheads*

Operating expenses will require USD 128,582. The breakdown of fund utilization is given in table 2 and 3.

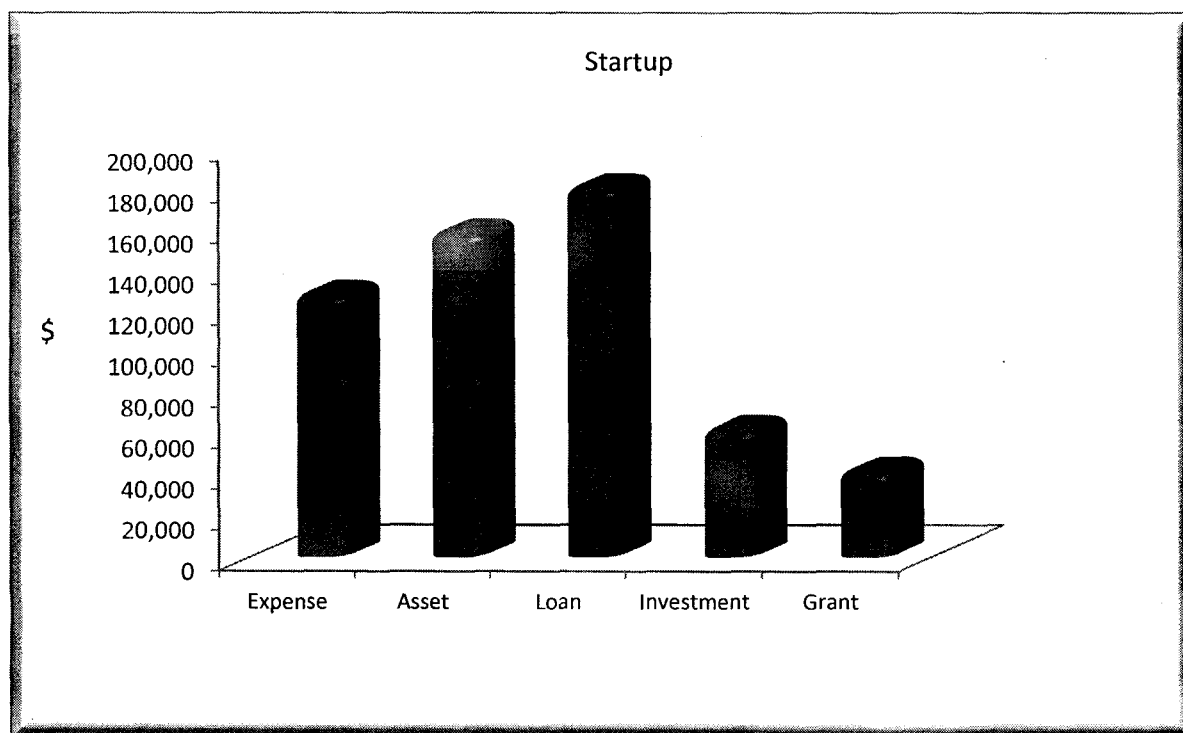
Table 3: Projected Budget for Fixed and Operations Overheads

| <b>Salary</b>                 |                                                  |                  |              |
|-------------------------------|--------------------------------------------------|------------------|--------------|
|                               | Items                                            | Amt (INR)        | Amt (USD)*   |
| 1                             | Salary                                           | 3,119,812        | 67822        |
|                               | Business Manager (1)                             |                  | 11535        |
|                               | Food Processing Engineer (1)                     |                  | 8145         |
|                               | Marketing Manager (1)                            |                  | 8805         |
|                               | Location Incharge (3)                            |                  | 19560        |
|                               | Book Keepers (3)                                 |                  | 5865         |
|                               | Accountant (1)                                   |                  | 3255         |
|                               | Extension Agents (8)                             |                  | 10440        |
|                               | Remuneration to Chairman and Vice Chairman       |                  | 217          |
| 2                             | Office rent                                      | 480,000          | 10440        |
| 3                             | Water and Electricity                            | 96,000           | 2088         |
|                               | Telephone and Internet Charges and web operation |                  | 2376         |
| 4                             |                                                  | 108,000          |              |
|                               |                                                  |                  | 2604         |
| 5                             | Gas                                              | 120,000          |              |
| 6                             | Stationary and Postage                           | 52,800           | 1152         |
| 7                             | Maintenance                                      | 48,000           | 1044         |
|                               |                                                  |                  |              |
| <i>Subtotal</i>               |                                                  | <i>4,026,472</i> | <i>87526</i> |
| <b>Training and Education</b> |                                                  |                  |              |
| 10                            | Training and education to farmers                | 90,000           | 1957         |
| <i>Subtotal</i>               |                                                  | <i>90,000</i>    | <i>1957</i>  |
| <b>Operation overheads</b>    |                                                  |                  |              |
| 11                            | Rental Cold Storage                              | 868700           | 18885        |
|                               | Registration/Renewal for plot for export         |                  | 543          |
| 12                            |                                                  | 25000            |              |
| 13                            | Board meeting                                    | 20000            | 435          |

|                 |                                                                  |                  |                |
|-----------------|------------------------------------------------------------------|------------------|----------------|
| 14              | Consultancy                                                      | 20000            | 435            |
|                 |                                                                  |                  | 180            |
| 15              | Certificate for Authorization for grading and marking for export | 8280             |                |
| 16              | Packaging of product                                             | 514080           | 11176          |
|                 | Cost of transport from Location to primary hub                   |                  | 4999           |
| 17              |                                                                  | 229950           |                |
|                 |                                                                  |                  |                |
| 19              | Cost of Pallets                                                  | 12500            | 272            |
| 20              | Contingency                                                      | 100000           | 2174           |
| <i>Subtotal</i> |                                                                  | <i>2,012,010</i> | <i>39115</i>   |
| <b>Total</b>    |                                                                  | <b>5,915,508</b> | <b>128,582</b> |

\*1USD = 46 INR

Total Investment required to start the project is USD 288,581.



**Figure 5: Start up Investments**

**c) Funding and sources**

- The assumed capital structure will be in the form of grant, equity and debt in the ratio of 15:22:63.
- USD 63869 will be raised as common stock from the farmer members.
- USD 43478 has been given as a grant from two development agencies, Sir Dorbji Tata Trust and Madhya Pradesh Rural Livelihoods Project for Marketing Initiatives and construction of infrastructures.
- The balance capital requirement of USD 181,414 will be raised in form of long term and short term loan for infrastructure and working capital.
- The potential financing agencies would be Agriculture & Processed Food Product Export Development Authority, National Horticulture Board and Agriculture Credit Cooperative Societies.

**d) Repayment Plan**

The long term loan will accrue an interest rate of 6% (Reserve Bank of India website). The annual loan payment is USD 13017 and will be paid at the end of the year.

The short term loan will be obtained at the interest rate of 5.25% and will be paid bi annually.

## VIII. Financial Plan

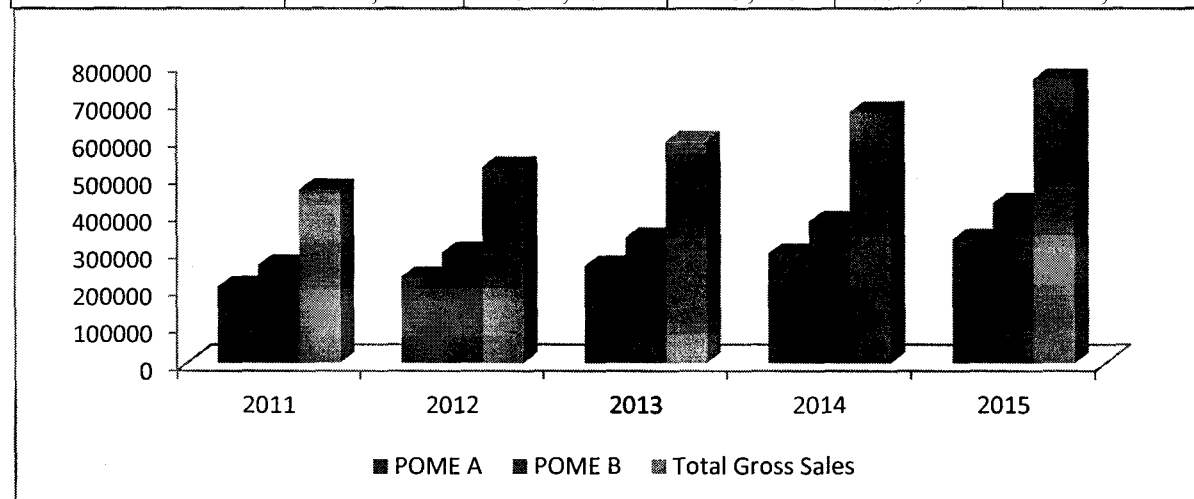
### a) Sales Forecast

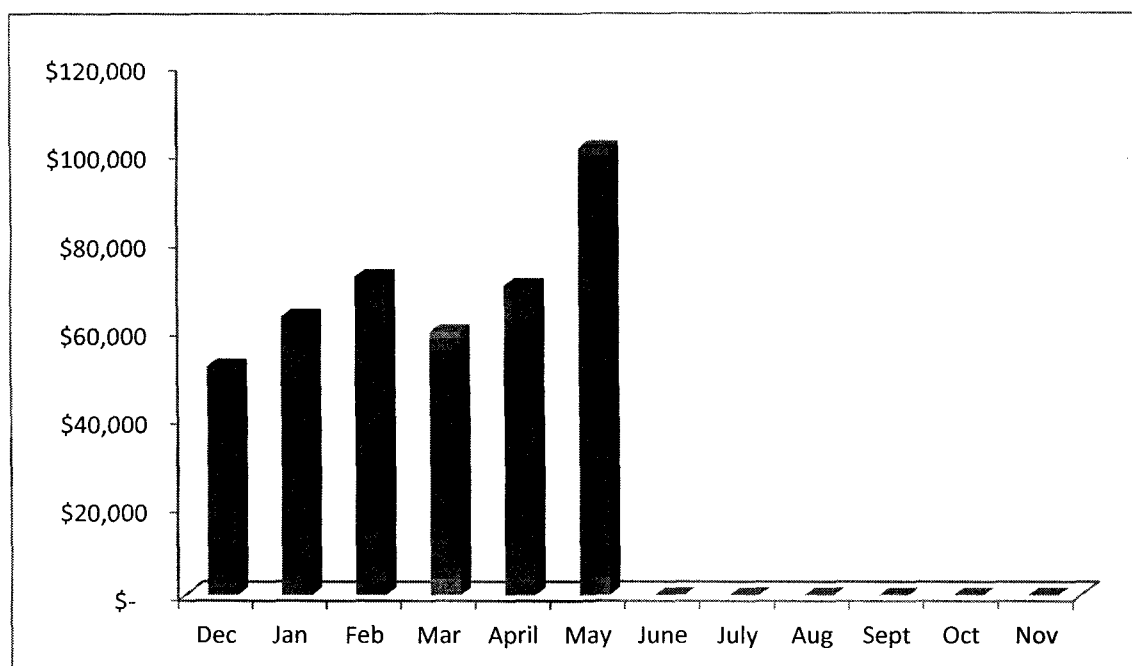
#### Yearly Sales Forecast

The forecasted sales are based on assumptions that 75% of the maximum yield is procured from the farmers. These are conservative estimates based on yield average over a ten year time span incorporating variable weather patterns. The average growth in production and sales is assumed at 13% over a period of ten years. There are two grades of pomegranates, Pome A which is export quality and Pome B which will be sold domestically. The export quality Pome A will be sold through the APEDA registered exporters assuming the minimum support price to be USD 674 per tonnes. The average domestic price prices are assumed to be USD 580 per tonnes which is one standard deviation from the mean calculated from the prices of 2007 and 2008. Because of the seasonality of production, most of the sales will take place from December till May. The following table and chart outlines the sales forecast for ATIFC.

Table 4: Sales Forecast by Year

| Sales/Year        | 2011    | 2012    | 2013    | 2014    | 2015    |
|-------------------|---------|---------|---------|---------|---------|
| POME A            | 203,548 | 230,009 | 259,910 | 293,699 | 331,880 |
| POME B            | 262,740 | 296,896 | 335,493 | 379,107 | 428,391 |
| Total Gross Sales | 466,288 | 526,905 | 595,403 | 672,806 | 760,270 |





**Figure 6: Sales Forecast by Month**

### **b) Projected Profit and Loss**

The projected profit and loss statement of ATIFC has an average gross margin of 19% over ten year time. The total gross margin is expected to increase with increase in sales volume due to reduction in overhead and variable cost. On average over ten year time frame, the ATIFC is expected to earn a net profit of 4.5%. The projected profit and loss statement for ten years is reported in the table 5 (Appendix-VII).

### **c) Cash Flow**

Figure 7 below gives the details of monthly cash flow assumptions for the ATIFC. Because of the seasonality in production, the ATIFC is assumed to realize positive cash flow during the months of December to May. During the lean period, the ending cash balance indicates that ATIFC will be able to meet its expenses incurred during the offseason (Appendix VIII, IX).

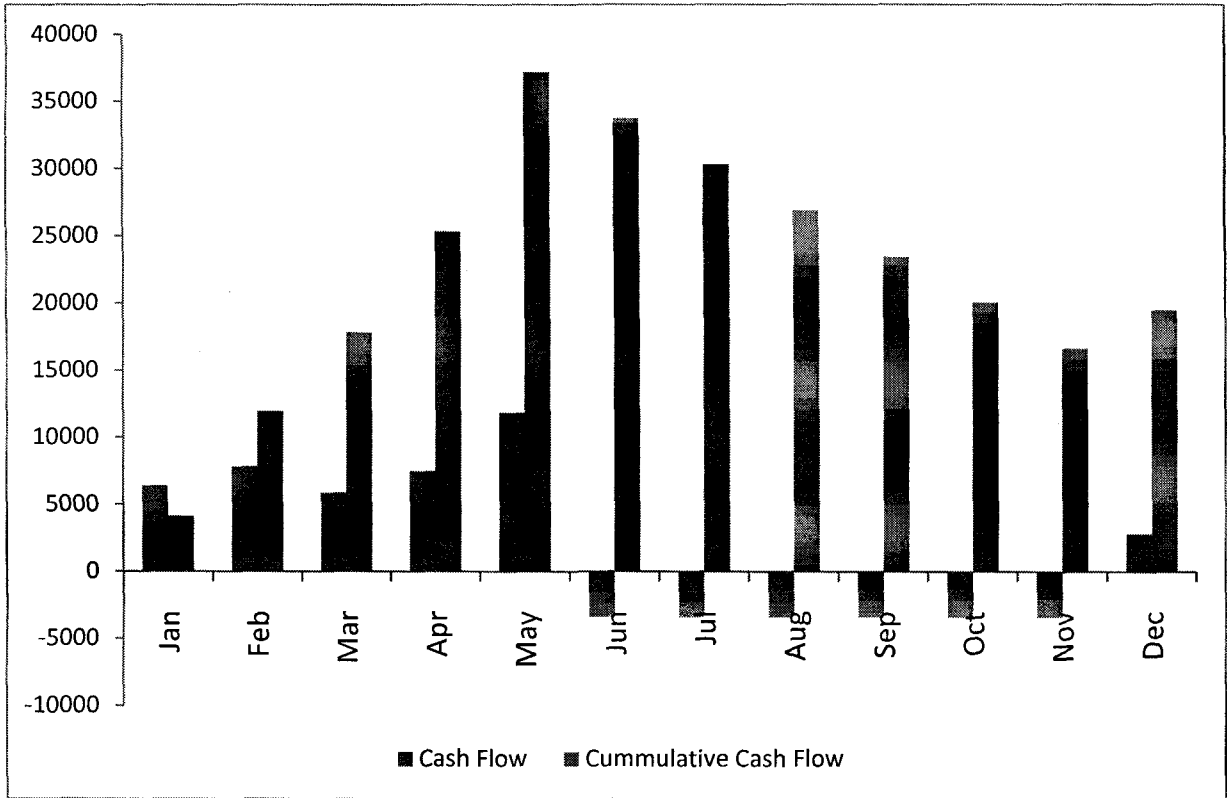


Figure 7: Monthly Cash Flow for First Year of Operation

## IX. Risk Analysis

### a) Break Even Analysis

The ATIFC break even analysis is based on its running cost which includes payroll and other fixed costs. It does not include the expense associated with the variable cost of production. Average monthly sales to breakeven are \$30,090.30 in first year, \$36,605.59 in the second year, \$ 24,691.69 in third year and so on. Total sales to breakeven are decreasing over time.

Table 8: Breakeven Analysis of ATIFC.

| Months                 | Year1              | Year 2             | Year 3             | Year 4             | Year 5             |
|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| January                | \$60,180.60        | \$73,211.18        | \$49,383.38        | \$35,882.71        | \$33,119.17        |
| February               | \$60,180.60        | \$73,211.18        | \$49,383.38        | \$35,882.71        | \$33,119.17        |
| March                  | \$60,180.60        | \$73,211.18        | \$49,383.38        | \$35,882.71        | \$33,119.17        |
| April                  | \$60,180.60        | \$73,211.18        | \$49,383.38        | \$35,882.71        | \$33,119.17        |
| May                    | \$60,180.60        | \$73,211.18        | \$49,383.38        | \$35,882.71        | \$33,119.17        |
| June                   | \$0.00             | \$0.00             | \$0.00             | \$0.00             | \$0.00             |
| July                   | \$0.00             | \$0.00             | \$0.00             | \$0.00             | \$0.00             |
| August                 | \$0.00             | \$0.00             | \$0.00             | \$0.00             | \$0.00             |
| September              | \$0.00             | \$0.00             | \$0.00             | \$0.00             | \$0.00             |
| October                | \$0.00             | \$0.00             | \$0.00             | \$0.00             | \$0.00             |
| November               | \$0.00             | \$0.00             | \$0.00             | \$0.00             | \$0.00             |
| December               | \$60,180.60        | \$73,211.18        | \$49,383.38        | \$35,882.71        | \$33,119.17        |
| <b>Monthly Average</b> | <b>\$30,090.30</b> | <b>\$36,605.59</b> | <b>\$24,691.69</b> | <b>\$17,941.36</b> | <b>\$16,559.59</b> |

### b) Sensitivity Analysis

#### 1. Cost Benefit Analysis

The net present value of ATIFC is USD 872587 at 12% interest rate over 10 year time period. From the possitive value of NPV it can be anticipated that the Cooperative will be profitable and obtain positive future cash flow. Also the internal rate of return is 66.4% where the benefit to cost ratio will be one which is very high. The average return on assest is 75% and return on equity is 38%. The high return on asset indicate the cooperative less dependece on assets to generate profit.

## 2. Best Case Worst Case Scenario

Best case worst case analysis is also done using Risk Solver Platform. The domestic prices are varied at three levels and production at four levels. The export prices are kept constant at the current support price of APEDA at 674 per tonnes. The average wholesale price estimated from randomly selected 18 markets is USD 784 per tonnes estimated from the randomly selected 18 different markets. The worst case price considered is about 1.37 standard deviations from the mean prices. However it is expected that Cooperative will be able to sell its product in domestic market above the prices used in business plan.

Table 9: Best Case Worst Case With Varying Domestic Price

| Scenario         | Domestic Price (\$/tons) | Export Price (\$/tons) | Domestic Sales (Tons) | Export Sales (Tons) | Total Revenue (\$) | Cost of Sales (\$) | Fixed Cost (\$) | Other Costs (\$) | Income tax (\$) | Total Profit (\$) |
|------------------|--------------------------|------------------------|-----------------------|---------------------|--------------------|--------------------|-----------------|------------------|-----------------|-------------------|
| Best Scenario    | 784                      | 674                    | 454.2                 | 302.8               | 560,180            | 314,306            | 48,099          | 3022             | 1302            | 194,752           |
| Worst Scenario   | 571                      | 674                    | 454.2                 | 302.8               | 463,435            | 401,984            | 48,099          | 3022             | 1302            | 9028              |
| Planned Scenario | 580                      | 674                    | 454.2                 | 302.8               | 467,523            | 401,984            | 48,099          | 3022             | 1302            | 13,116            |

The simulated results show that ATIFC will be able to make a profit of USD 9,028 even in the worst case.

Table 10: Best Case Worst Case with Varying Production.

| Scenario         | Domestic Price (\$/tons) | Export Price (\$/tons) | Total Prod (Tons) | Domestic Sales (60%) | Export Sales (40%) | Total Revenue (\$) | Cost of Sales (\$) | Fixed Cost (\$) | Other Costs (\$) | Income tax (\$) | Total Profit (\$) |
|------------------|--------------------------|------------------------|-------------------|----------------------|--------------------|--------------------|--------------------|-----------------|------------------|-----------------|-------------------|
| Best Scenario    | 580                      | 674                    | 1,404             | 842                  | 562                | 867,110            | 670,748            | 48,099          | 3,022            | 1,302           | 143,93            |
| Better Scenario  | 580                      | 674                    | 1,000             | 600                  | 400                | 463,435            | 555,349            | 48,099          | 3,022            | 1,302           | 62,251            |
| Planned Scenario | 580                      | 674                    | 757               | 454                  | 303                | 467,523            | 401,984            | 48,099          | 3,022            | 1,302           | 13,116            |
| Worst Scenario   | 580                      | 674                    | 700               | 420                  | 280                | 432,320            | 378,306            | 48,099          | 3,022            | 1,302           | 1,591             |

The weather and disease are the potential risks associated with agriculture business. A bad weather or a disease outbreak can reduce the estimated production and hence the sales. The best production case is assumed to be maximum yield per hectare that can be obtained in the first year of production and the worst production is assumed to be the 50% of the best yield. The viability of ATIFC would be greatly affected if the production goes below 50% of the maximum yield. With the planned scenario, the cooperative will be able to make decent profits and would be able to meet other expenditures.

### 3. Stochastic Analysis of ATIFC

To analyze how ATIFC performs in case of uncertainty associated with production and sales, risk analysis is done using Monte Carlo Simulation in excel. Minimum and maximum production of 700 tonnes and 800 tonnes is considered. A mean of 750 with standard deviation 70.71 was derived. The mean domestic sale price of USD 653 was estimated by taking the minimum price of USD 522 and maximum price of USD 784 per tonnes with standard deviation 185. Five hundred random numbers were used to simulate a uniform distribution on production and domestic sales prices. The result suggests that there are 78% chances that ATIFC will be profitable and less than 22 % chance that ATIFC will go in losses (Appendix-X).

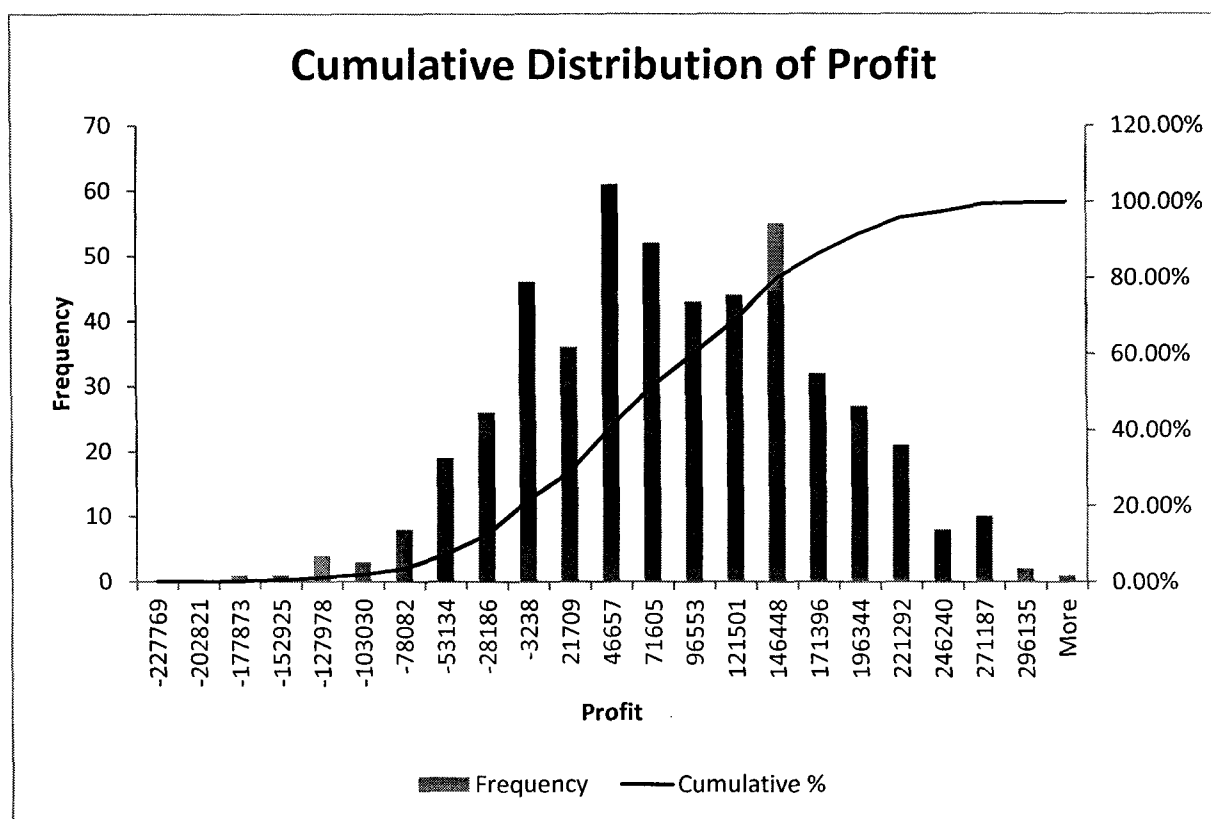


Figure 8: Cumulative Distribution of Profits of ATIFC

### c) Exit Plan

Factors that affect the cooperative's operations are crop disease, weather, domestic and international agricultural policy, low farmer participation, and members joining other cooperatives.

Crop insurance will insure the cooperative against crop effects. After years of solid cash flow, the cooperative will be able to increase the amount paid to farmers which would retain members and increase participation. Flexibility to agricultural policy is one of the main defenses against bad policy. Cash balances should cushion the firm against rapidly expanding negative effects. Lastly, if all else fails folding the cooperative, liquidating assets, and returning excess cash to farmers is a last resort.

## Citations

Agriculture Finance Corporation Ltd, A Project Report on Export Promotion of Pomegranate from India under GOI-UNCTAD DFID Project, Internet site :  
[http://unctadindia.org/Studies\\_ExportPromotionOfPomegranateFromIndia.pdf](http://unctadindia.org/Studies_ExportPromotionOfPomegranateFromIndia.pdf)

Chengappa, P., Food Retail Chain and Super Market Evolution in India, Internet site:  
[http://www.ncap.res.in/contract\\_%20farming/Resources/3.%20P.G.%20Chengappa.pdf](http://www.ncap.res.in/contract_%20farming/Resources/3.%20P.G.%20Chengappa.pdf)

Chiniwar, S. 2009. EXPORT OF POMEGRANATES FROM KARNATAKA: A STUDY OF THE ROLE OF KAPPEC. Acta Hort. (ISHS) 831:41-46, Internet site:  
[http://www.actahort.org/books/831/831\\_4.htm](http://www.actahort.org/books/831/831_4.htm)

Indian Legislation, Multi State Cooperative Society Act 2002, Internet site:  
[http://www.commonlii.org/in/legis/num\\_act/mcsa2002364/](http://www.commonlii.org/in/legis/num_act/mcsa2002364/)

Labour Bureau of India, Internet site: <http://laborbureau.nic.in/schemes.html>

Ministry of Agriculture, GOI, Indian Horticulture Database-2008, Internet site:  
<http://www.nhb.gov.in/OnlineClient/MonthwiseAnnualPriceandArrivalReport.aspx>

Ministry of Agriculture, GOI, Indian Horticulture Database-2008, Internet site:  
<http://nhb.gov.in/documents/estimates.pdf>

Ministry of Commerce and Industry, GOI, Agriculture and Processed Food Products Export Development Authority, Internet site:  
[http://apeda.com/tradejunction/exporters\\_list.aspx?ExpName=&state=MadhyaPradesh](http://apeda.com/tradejunction/exporters_list.aspx?ExpName=&state=MadhyaPradesh)

Ministry of Railway, GOI, Freight Rate for 2005-06, Internet site:  
[http://www.indianrailways.gov.in/deptts/commercial/freight\\_rate-2k5/rate\\_inst\\_17-2k5-1.pdf](http://www.indianrailways.gov.in/deptts/commercial/freight_rate-2k5/rate_inst_17-2k5-1.pdf)

Pomegranate, Internet site:  
<http://planning.up.nic.in/innovations/inno3/ph/pomegranate.htm>

Pomegranate Post Harvest Technology, Internet site:  
[http://nhb.gov.in/bulletin\\_files/fruits/pomegranate/pom009.pdf](http://nhb.gov.in/bulletin_files/fruits/pomegranate/pom009.pdf)

Pay Scale Calculator, India, Internet site:  
[www.payscale.com/resources.aspx?nc=lp\\_calculator\\_india01](http://www.payscale.com/resources.aspx?nc=lp_calculator_india01).

Procedure of Registration, APEDA, Internet site:

[http://www.apeda.com/apedawebsite/HelpNews/Procedure for Registration.html](http://www.apeda.com/apedawebsite/HelpNews/Procedure_for_Registration.html)

Rural Industries Research and Development Corporation, Australian Government, Pomogranate Investment Background, Internet site:

<https://rirdc.infoservices.com.au/items/08-153>

Regulations of Export of Fresh Pomegranates to European Union through Control of Pesticide residue, APEDA, Internet site:

<http://apeda.com/apedawebsite/Anarnet/rmppomegranatefinalapprod21208.pdf>

Sample Cost to Establish and Produce Pomegranates, University of California Cooperative Extension 2005, Internet site:

<http://coststudies.ucdavis.edu/files/Pomegranatevs2005.pdf>

Sharan, G., S. Srivastav, K.P. Rawale, and U. Dave, 2009 "Development of Corrugated Fiber Board Cartons for Long Distance of Transport of Tomatoes in India" *International Journal for Service Learning in Engineering*:4(1): 31-43.

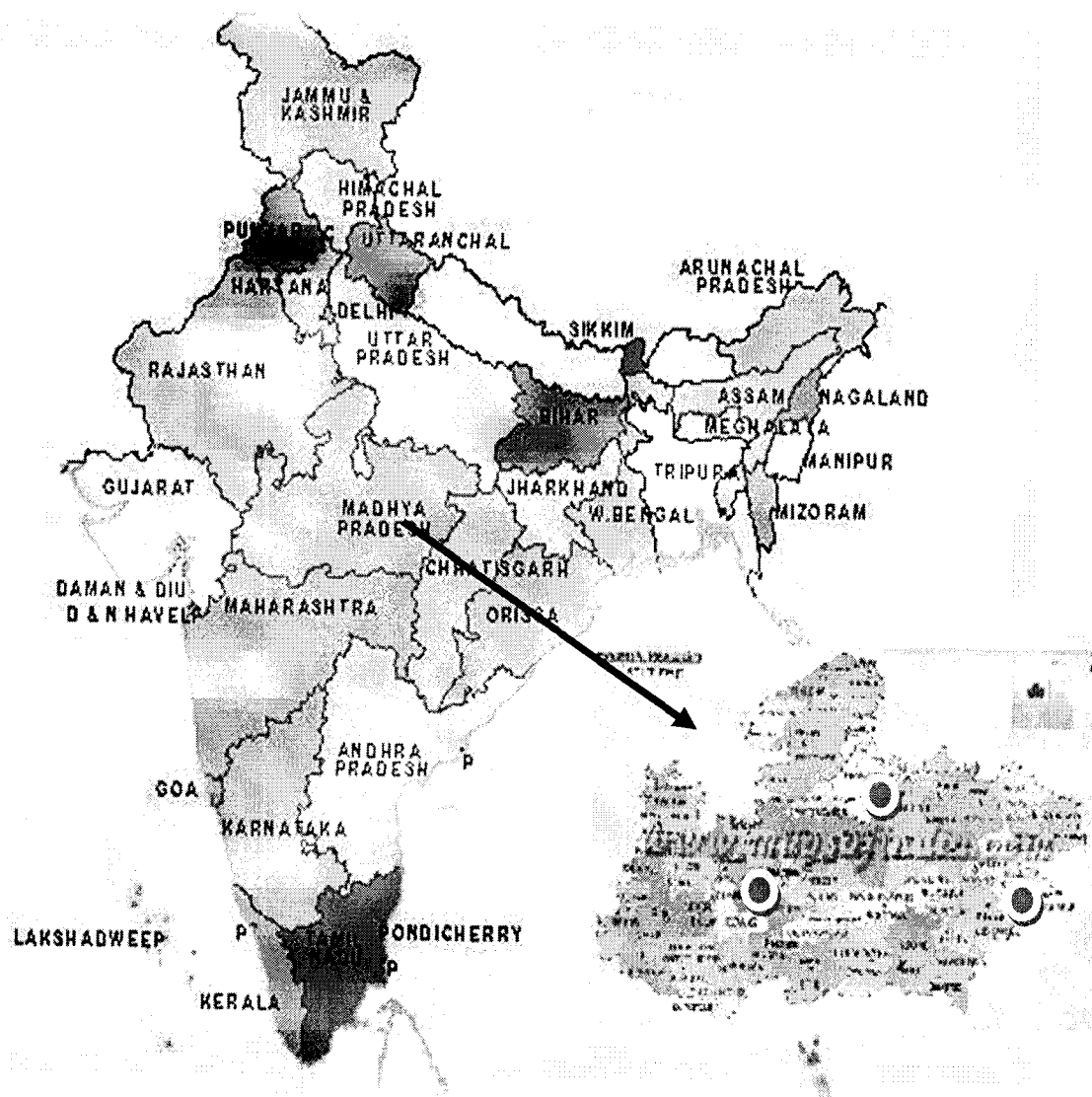
Sikka, B., and K.C. Azad, 1991 "Consumption Pattern and Demand Projections for Fruit in India" *Acta Horticulturae* 270: 231-236.

USAID, Inma Agribusiness Program Iraq- a Strategy for Pomegranate, April 2008

Viswanadham, N, "Food and Retail Chains in India" Institute of South Asian Studies, National University of Singapore, October 2006.

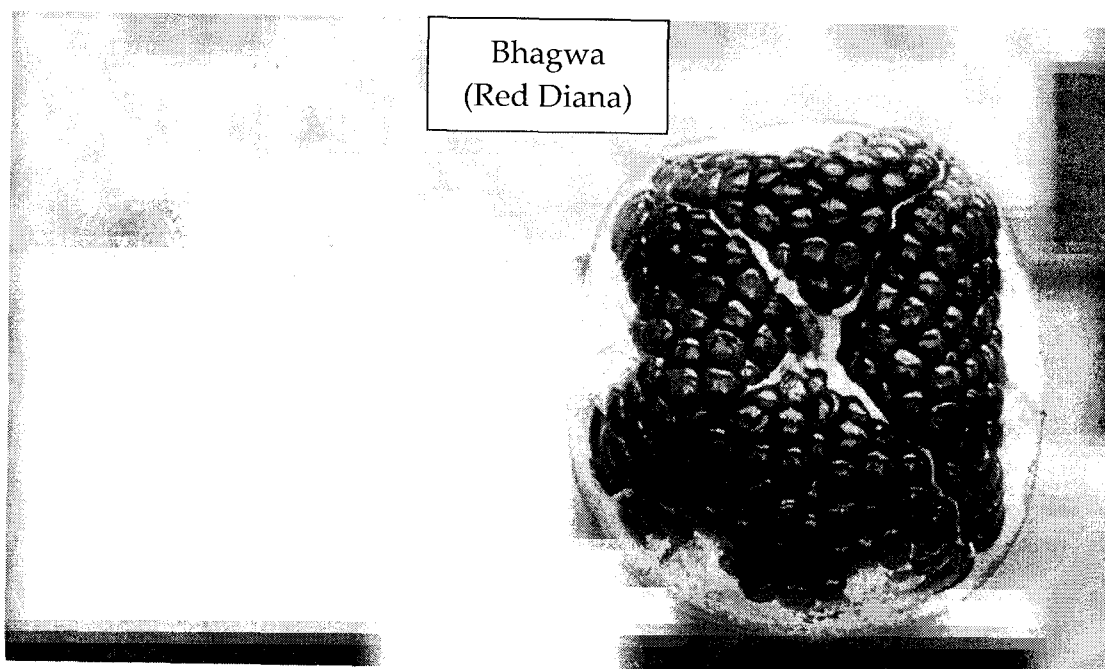
## Appendix-I

### Project Location

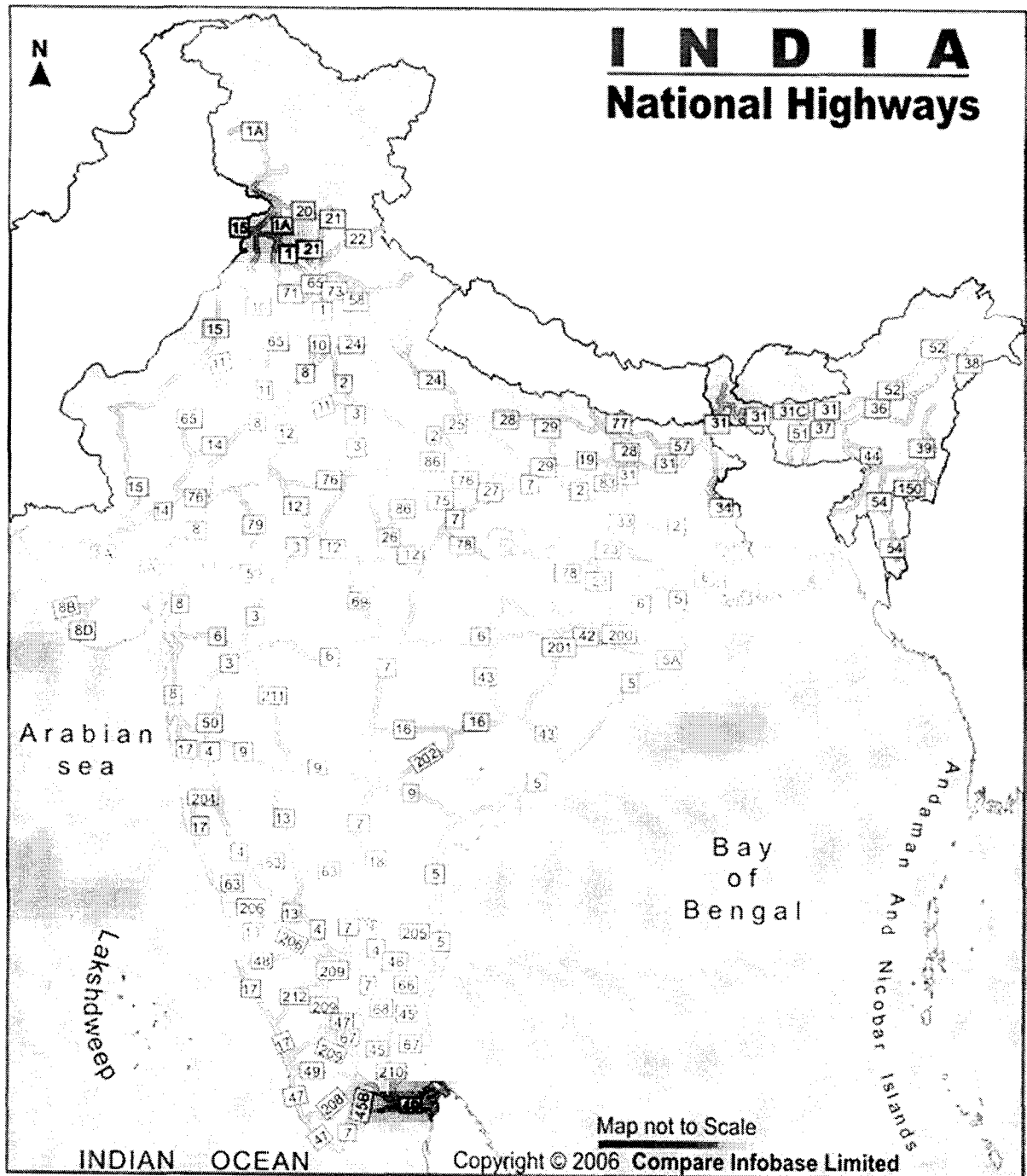


Project Districts

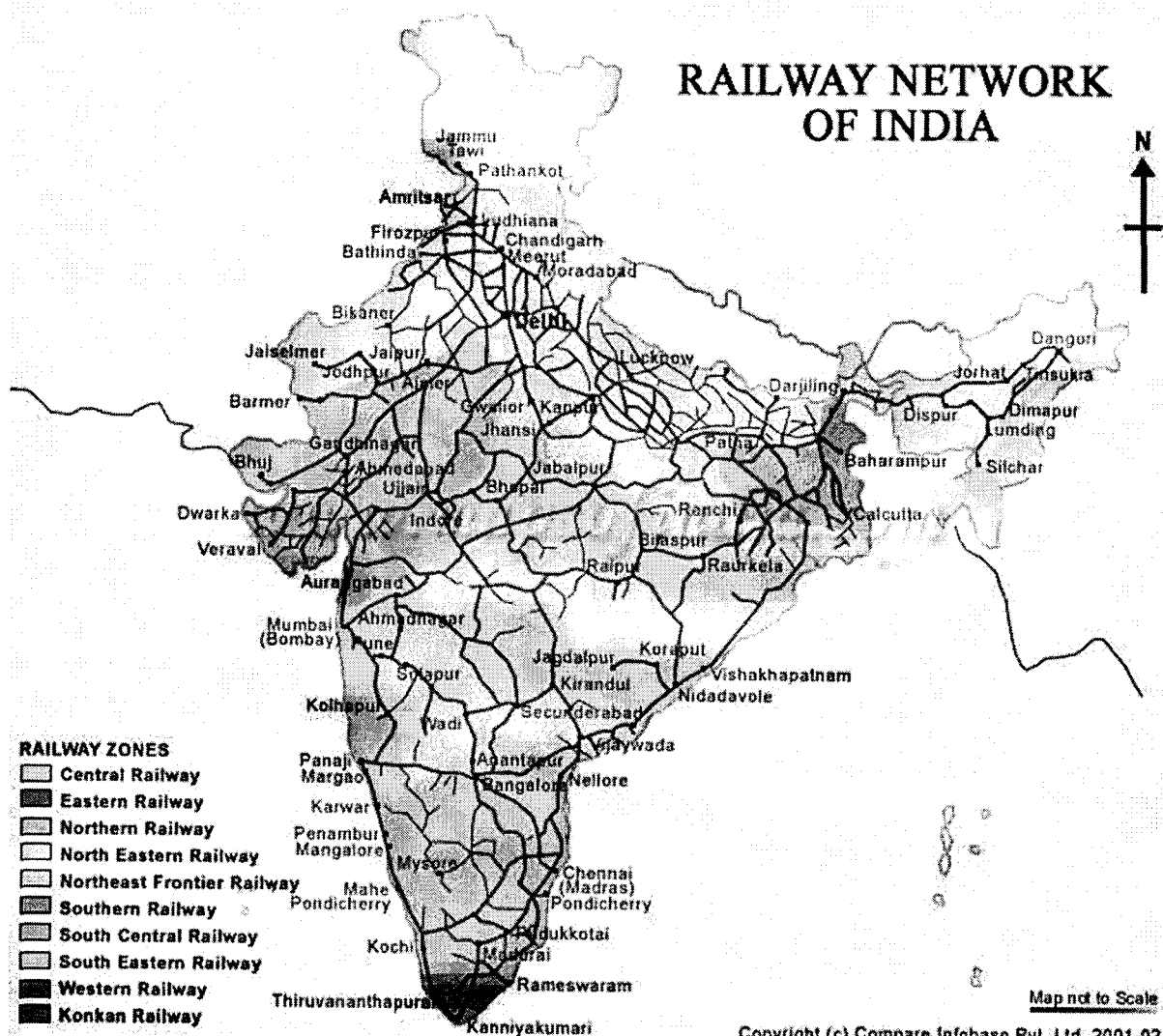
## Appendix-II



# Appendix-III



## Appendix-IV

RAILWAY NETWORK  
OF INDIA

## Appendix-V

**Table : Cost Benefit Anlysis of One Acre Pomegrante Orchard**

| Year                           | Establishmet<br>and<br>Maintenance<br>Cost (1 acre<br>plot) | No of<br>Pants/Acre  | Production/tree<br>(in Kilogram) | Total<br>Production<br>(in<br>Kilogram) | Gross<br>revenue<br>@Rs<br>15/kilogram | Net<br>return |
|--------------------------------|-------------------------------------------------------------|----------------------|----------------------------------|-----------------------------------------|----------------------------------------|---------------|
| 1/1/2007                       | 19311                                                       | 252                  |                                  | 0                                       | 0                                      | (19311)       |
| 1/1/2008                       | 6227                                                        | 252                  |                                  | 0                                       | 0                                      | (6227)        |
| 1/1/2009                       | 10986                                                       | 252                  |                                  | 0                                       | 0                                      | (10986)       |
| 1/1/2010                       | 16938                                                       | 252                  | 7                                | 1764                                    | 21168                                  | 4230          |
| 1/1/2011                       | 16828                                                       | 252                  | 8                                | 2016                                    | 24192                                  | 7364          |
| 1/1/2012                       | 16828                                                       | 252                  | 11                               | 2772                                    | 33264                                  | 16436         |
| 1/1/2013                       | 16828                                                       | 252                  | 16                               | 4032                                    | 48384                                  | 31556         |
| 1/1/2014                       | 18511                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 41969         |
| 1/1/2015                       | 20362                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 40118         |
| 1/1/2016                       | 22398                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 38082         |
| 1/1/2017                       | 24638                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 35842         |
| 1/1/2018                       | 27102                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 33378         |
| 1/1/2019                       | 29812                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 30668         |
| 1/1/2020                       | 32793                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 27687         |
| 1/1/2021                       | 36072                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 24408         |
| 1/1/2022                       | 39680                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 20800         |
| 1/1/2023                       | 43647                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 16833         |
| 1/1/2024                       | 43647                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 16833         |
| 1/1/2025                       | 43647                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 16833         |
| 1/1/2026                       | 43647                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 16833         |
| 1/1/2027                       | 43647                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 16833         |
| 1/1/2028                       | 43647                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 16833         |
| 1/1/2029                       | 43647                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 16833         |
| 1/1/2030                       | 43647                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 16833         |
| 1/1/2031                       | 43647                                                       | 252                  | 20                               | 5040                                    | 60480                                  | 16833         |
| <b>Net present value</b>       |                                                             | <b>INR 97,168.42</b> |                                  |                                         |                                        |               |
| <b>Internal rate of return</b> |                                                             | <b>35%</b>           |                                  |                                         |                                        |               |

## Appendix-VI

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## Appendix-VII

Table 5: Projected Profit and Loss Statement of ATIFC

| Items                        | Year1   | Year2   | Year3   | Year4   | Year5   | Year6   | Year7   | Year8     | Year9     | Year10    |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|-----------|-----------|-----------|
| Sales (\$)                   | 466,288 | 526,905 | 595,403 | 672,806 | 760,270 | 859,105 | 970,789 | 1,096,992 | 1,239,601 | 1,400,749 |
| Direct Cost of Sales (\$)    | 401,153 | 445,513 | 495,321 | 551,271 | 614,148 | 684,839 | 764,345 | 853,796   | 954,470   | 1,067,808 |
| Others (\$)                  | 3,022   | 3,146   | 3,275   | 3,409   | 3,549   | 3,694   | 3,846   | 4,004     | 4,168     | 4,339     |
| Total Cost of Sales (\$)     | 404,175 | 448,659 | 498,595 | 554,680 | 617,697 | 688,534 | 768,191 | 857,800   | 958,638   | 1,072,146 |
| Gross Margin (\$)            | 62,113  | 78,246  | 96,808  | 118,126 | 142,573 | 170,572 | 202,598 | 239,192   | 280,963   | 328,602   |
| Gross Margin (%)             | 13      | 15      | 16      | 18      | 19      | 20      | 21      | 22        | 23        | 23        |
| <i>Expense</i>               |         |         |         |         |         |         |         |           |           |           |
| Fixed (\$)                   | 48,099  | 65,232  | 48,176  | 37,800  | 37,265  | 29,874  | 22,469  | 21,779    | 21,072    | 20,873    |
| EBIT (\$)                    | 11,473  | 9,790   | 45,193  | 69,225  | 88,784  | 119,608 | 152,180 | 194,988   | 228,373   | 268,460   |
| Profit before Patronage (\$) | 1,240   | (7)     | 35,858  | 60,380  | 80,458  | 111,833 | 144,989 | 188,415   | 222,456   | 263,238   |
| Before Tax Income (\$)       | 13,018  | 12,996  | 19,942  | 32,015  | 40,935  | 51,226  | 64,132  | 66,430    | 81,923    | 89,964    |
| Tax (\$)                     | 1,302   | -       | 1,995   | 3,202   | 4,094   | 5,123   | 6,414   | 6,643     | 8,193     | 8,997     |
| After Tax Profit (\$)        | 11,720  | 13,015  | 17,951  | 28,819  | 36,847  | 46,109  | 57,724  | 59,790    | 73,734    | 80,970    |
| Net Profit (\$)              | 11,720  | 13,015  | 17,951  | 28,819  | 36,847  | 46,109  | 57,724  | 59,790    | 73,734    | 80,970    |
| Net Profit/Sales (%)         | 2.51    | 2.47    | 3.01    | 4.28    | 4.85    | 5.37    | 5.95    | 5.45      | 5.95      | 5.78      |

## Appendix-VIII

Table 6: Monthly Cash Flow Projection

| Particulars                   | Beginni<br>ng Cash | Jan    | Feb    | Mar    | Apr    | May     | June    | July    | Aug     | Sept    | Oct     | Nov     | Dec    |
|-------------------------------|--------------------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|--------|
| <b>Total Sales</b>            |                    | 70,424 | 80,424 | 66,588 | 78,235 | 112,828 | 0       | 0       | 0       | 0       | 0       | 0       | 57,790 |
| Total Cost                    |                    |        |        |        |        |         |         |         |         |         |         |         |        |
| Variable                      |                    | 60,586 | 69,189 | 57,287 | 67,307 | 97,067  | 0       | 0       | 0       | 0       | 0       | 0       | 49,717 |
| Fixed                         |                    | 4,008  | 4,008  | 4,008  | 4,008  | 4,008   | 4,008   | 4,008   | 4,008   | 4,008   | 4,008   | 4,008   | 4,008  |
| Other                         |                    | 252    | 252    | 252    | 252    | 252     | 252     | 252     | 252     | 252     | 252     | 252     | 252    |
| <b>Gross Profit</b>           |                    | 5,577  | 6,974  | 5,042  | 6,668  | 11,501  | (4,260) | (4,260) | (4,260) | (4,260) | (4,260) | (4,260) | 3,812  |
| Qualified Patronage<br>refund |                    |        |        |        |        | 496     |         |         |         |         |         |         | 496    |
| Tax                           |                    |        |        |        |        |         |         |         |         |         |         |         | 1,302  |
| <b>After Tax Profit</b>       |                    | 5,577  | 6,974  | 5,042  | 6,668  | 11,005  | (4,260) | (4,260) | (4,260) | (4,260) | (4,260) | (4,260) | 2,014  |
| Depreciation                  |                    | 2,424  | 2,424  | 2,424  | 2,424  | 2,424   | 2,424   | 2,424   | 2,424   | 2,424   | 2,424   | 2,424   | 2,424  |
| Qualified Patronage<br>refund |                    | 83     | 83     | 83     | 83     | 83      | 83      | 83      | 83      | 83      | 83      | 83      | 83     |
| <b>Gross Cash Flow</b>        |                    | 8,084  | 9,480  | 7,548  | 9,175  | 13,511  | (1,754) | (1,754) | (1,754) | (1,754) | (1,754) | (1,754) | 4,521  |
| Principle                     |                    | 606    | 606    | 606    | 606    | 606     | 606     | 606     | 606     | 606     | 606     | 606     | 606    |
| Common Stock Dividend         |                    | 1,065  | 1,065  | 1,065  | 1,065  | 1,065   | 1,065   | 1,065   | 1,065   | 1,065   | 1,065   | 1,065   | 1,065  |
| <b>Cash Flow</b>              | (2,283)            | 6,413  | 7,810  | 5,878  | 7,505  | 11,841  | (3,424) | (3,424) | (3,424) | (3,424) | (3,424) | (3,424) | 2,851  |
| <b>Cummulative Cash Flow</b>  |                    | 4,130  | 11,941 | 17,818 | 25,323 | 37,164  | 33,740  | 30,316  | 26,892  | 23,468  | 20,044  | 16,620  | 19,471 |

## Appendix-IX

Table 7: Yearly Cash Flow Statement of ATIFC

| Particular                 | Beginning Cash | 2011    | 2012    | 2013    | 2014    | 2015    |
|----------------------------|----------------|---------|---------|---------|---------|---------|
| Total Sales                |                | 466,288 | 526,905 | 595,403 | 672,806 | 760,270 |
| Total Cost                 |                |         |         |         |         |         |
| Variable                   |                | 401,153 | 445,513 | 495,321 | 551,271 | 614,148 |
| Fixed                      |                | 48,099  | 65,232  | 48,176  | 37,800  | 37,265  |
| Other                      |                | 3,022   | 3,146   | 3,275   | 3,409   | 3,549   |
| Gross Profit               |                | 14,014  | 13,014  | 48,632  | 80,326  | 105,308 |
| Qualified Patronage refund |                | 992     | 0       | 28,686  | 48,304  | 64,367  |
| Tax                        |                | 1,302   | 0       | 1,995   | 3,202   | 4,094   |
| After Tax Profit           |                | 11,720  | 13,014  | 17,951  | 28,819  | 36,847  |
| Depriciation               |                | 29,084  | 46,292  | 29,324  | 19,048  | 18,627  |
| Qualified Patronage refund |                | 992     | 0       | 28,686  | 48,304  | 64,367  |
| Gross Cash Flow            |                | 41,796  | 59,306  | 75,961  | 96,172  | 119,840 |
| Principle                  |                | 7,268   | 7,704   | 8,167   | 8,657   | 9,176   |
| Common Stock Dividend      |                | 12,774  | 13,022  | 12,774  | 19,945  | 24,850  |
| Cash Flow                  | (2,283)        | 21,754  | 38,580  | 55,021  | 67,570  | 85,814  |
| Cummulative Cash Flow      |                | 19,471  | 58,051  | 113,072 | 180,641 | 266,456 |

## Appendix-X

Table 10: Cumulative Distribution of profits of ATIFC

| <i>Profits</i> | <i>Frequency</i> | <i>Cumulative %</i> |
|----------------|------------------|---------------------|
| -227769        | 0                | 0.00%               |
| -202821        | 0                | 0.00%               |
| -177873        | 1                | 0.20%               |
| -152925        | 1                | 0.40%               |
| -127978        | 4                | 1.20%               |
| -103030        | 3                | 1.80%               |
| -78082         | 8                | 3.40%               |
| -53134         | 19               | 7.20%               |
| -28186         | 26               | 12.40%              |
| -3238          | 46               | 21.60%              |
| 21709          | 36               | 28.80%              |
| 46657          | 61               | 41.00%              |
| 71605          | 52               | 51.40%              |
| 96553          | 43               | 60.00%              |
| 121501         | 44               | 68.80%              |
| 146448         | 55               | 79.80%              |
| 171396         | 32               | 86.20%              |
| 196344         | 27               | 91.60%              |
| 221292         | 21               | 95.80%              |
| 246240         | 8                | 97.40%              |
| 271187         | 10               | 99.40%              |
| 296135         | 2                | 99.80%              |
| More           | 1                | 100.00%             |

## Appendix-XI

Table 11: Timeline of Activities

[illegible]

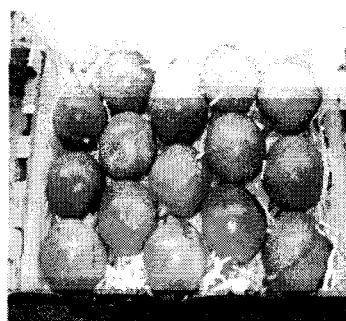
## Appendix-XII

### Packaging and Palleting

Packaging in Cartons: One carton can accommodate 10, 12 or 15 counts of pomegranates depending on its size.



12 COUNT

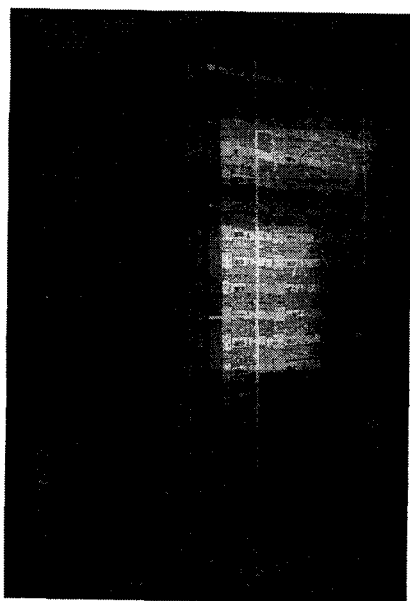


15 COUNT

Sourced from FCI report submitted to UNCTAD

### Palleting

200 cartons are required to make a pallet. One pallet contains 20 layers. One layer contains 10 cartons.



Pallets in Cold storage

Net weight of fruit in each carton is 4 kilogram, excluding the weight of filling material and carton.

One container requires 16000 kilograms of fruit or 4000 cartons.