

Kinow Export Development Strategy



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Small & Medium Enterprise Development Authority

Government of Pakistan

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Executive Summery

With 2.1 million tons, Pakistan is the sixth largest producer of Kinow (mandarin) and oranges in the world. Pakistan world mandarin and oranges market share during the year 1997 was 0.9 percent and 3.6 percent in terms of value and volume respectively. But even this market share could not be retained longer as Pakistan mandarin exports show drastic drop from US\$ 14 millions at 89,000 metric tones (4.2 percent of the total production) in 1997 down to 51,000 metric tones in the year 1998-99 with average price per ton of US\$ 159. One of the major causes for this huge drop is: indiscriminate & ruthless competition among exporters based on compromised quality & prices, poor perception of Pakistani Kinow in the international markets, lousy packaging and non-conformity to the international standards.

With export volume of the year 1997 i.e., 89,000 Mt and with US\$ 500/Mt, Pakistan can achieve export value of US\$ 44 million in short-term period. It was observed that Spain has exported 64 percent of its total mandarin and orange farm production in the year 1997 at average value of US\$ 737/Mt, followed by Morocco and Turkey with 50 percent and 30 percent respectively. Whereas, Pakistan could only export 4 percent of its total production during the year 1997, which further declined in the years 1998 and 1999. Therefore, export target of 25 percent of the total production is being set as a benchmark.

Alternative strategic projections are proposed in order to develop value chains of Kinow. Targets have been set to achieve export value of US\$ 44, US\$ 183 & US\$ 306 millions in the short-term (1-2 years), medium-term (3-5 years) and long-term (5-7 years) respectively. Strategic options are divided into three levels. Level 1: short-term (improve quality and product image), level 2: (increase volume and improve quality), level 3: long-term (increase production, volume and improve quality).

Agriculture sector of SMEDA had identified Kinow as a potential sub sector of fruits and is actively engaged to improve production, quality and markets for Kinow. SMEDA has taken up the responsibility to develop value chains of Kinow. The indispensable interventions, identified by SMEDA, required to develop Kinow value chain are:

- Concerted marketing campaigns, development of umbrella of Brand etc.
- Formalization of the export sector i.e., development of export houses, export procedures etc.
- Setting up of a cool chain.
- Formation of Horticulture Marketing Boards (The primary objective of forming a horticulture marketing board is to promote, regulate, coordinate, control and improve the export of horticulture).

The requisite financial interventions & estimated credit availability for the entire Kinow value chain, in order to achieve above strategic levels as follows:

- Infrastructure Finance: **US\$ 40 million** (for the Kinow export)
- Running Finance: **US\$ 15 million** (credit line for the processors & packaging)
- Seasonal Credit: **US\$ 24 million** (for the orchard farmers & R&D).

It is estimated that in order to achieve medium-term targets, Pakistan would have to export 306,000 metric tons of Kinow at US\$ 600 per metric ton. It has been calculated that the projected profit available for appropriation and tax for a single processing cum export unit under the proposed set-up will be US\$ 1.42 million. Therefore, the total profit available for appropriation and tax for 38 model units would be US\$ 54 million (in the medium-term).

It has been estimated that with investment of US\$ 78 million, Kinow export sales revenue will be US\$ 184 million and the total earning before tax would be US\$ 54 million, compared to that of total Kinow sales revenue of US\$ 14 million in the year 1997.

Introduction

Pakistan is blessed with vast agricultural resources on account of its fertile land, well-irrigated plains, extremes of weather, and centuries old tradition of farming. Pakistan is one of the few countries of the world where fruits grown in cool temperate climate (apples, plums, pears, cherries), warm temperate (apricots, grapes, pomegranates and melon), and subtropical climate (citrus, mango, banana, dates and guava) are available. Citrus and mango are the major fruits and accounts for 32 and 15 percent of the total Pakistan fruits production of 6.3 million tons respectively. Citrus includes oranges, mandarins (Kinow), grapefruits and lemons, however, only Kinow accounts for 67 percent of the total Pakistan citrus production with 1.4 million tons.

Pakistan is also the largest producer of 'Citrus Reticula' variety (Kinow), this unique variety of citrus is indigenous to this part of the world. According to an estimate approx. 95 percent of the total Kinow produced all over the world is grown in Pakistan. The harvesting season lasts for 4 months, starting from mid December to mid of April. However, according to a rough estimate of industry, approximately 20-40 percent of the produce is wasted during pre & post-harvest stages. Mismanagement of diseases, unfavorable weather, delay in harvesting, absence of proper roads and cold storage facilities, glut formation in the market and other similar factors are responsible for these losses.

Larger part of the world citrus imports accounts for Oranges with US\$ 2.08 Billion at 42 percent market share, leaving Mandarin being second major contributor with US\$ 1.6 Billion (FAO 1998). Interestingly Pakistan registered 135 percent growth in value and 117 percent increase in Kinow (mandarin) exports volume during the year 1996-97. These are the highest growth rates achieved by any single country during that period followed by South Africa - with 100 percent value & 95 percent volume growth, Brazil - with 75 percent value & 23 percent volume growth and Australia - with 12 percent value & 7 percent volume growth. However this achievement could not be maintained.

SMEDA has given top priority to Pakistan fruits and in particular to Kinow because of its export potential and ability to earn huge foreign exchange. SMEDA agriculture sector has conducted a

study to assess the current situation and probability of improvement in production, post harvest handling, packaging, processing, storage. It has also worked out the need for support services and international marketing of Kinow.

SMEDA's generic approach of breaking down a product into a value added chain and studying each link with reference to its market development, technology up-gradation, human resource training, financial requirements and regulatory rationalization, is being applied to the production, distribution and export of Kinow.

This report cum strategic document focuses on Kinow value addition chain; a brief review of present status and future potential is presented. Factors affecting or limiting the growth are identified. Alternative strategic projections are proposed in order to develop value chains of Kinow. Targets have been set for short-term (1-2 years), medium-term (3-5 years) and long-term (5-7 years). The indispensable immediate interventions required to develop Kinow value chain are identified and presented in detail. In the end requisite financial interventions in order to achieve strategic targets are given with cost and benefit.

It may be noted that information provided in the following report cum strategic document, regarding Pakistan Kinow trade, is also based on the data gathered from primary research by means of unstructured interviews and observations. Cross-examination of the data was conducted at each stage in order to insure accuracy; however, it is assumed that respondents may have also given biased responses.

1. Chapter: The Format

The format of the Kinow report cum strategic document as follows:

Chapter 2: Cultivation of Kinow

This chapter focuses on production, yield and area under cultivation of Kinow (mandarin) in Pakistan. Some International data of mandarin production is also provided to overview the existing world scenario. High rate of existing Pre & Post harvest losses and factors responsible for the loss of millions of US \$ are discussed. Chapters study overall highlights the major constraints that are keeping us behind the other producers.

Chapter 3: Kinow Distribution & Marketing Channel

This chapter identifies and discusses in detail, three prevailing modes of Kinow consumption in local and international markets. Study on the processing of fresh Kinow and preparation of FCKJ is also presented.

Chapter 4: International Markets and Marketing

This chapter provides wider picture of world citrus markets with emphasis on Kinow (mandarin) trade. The leading Kinow importing and exporting markets on the basis of world regions and countries were studied and discussed in detail. This chapter also discusses, investigates and unveils those vital issues due to which Pakistan's Kinow exports have shown a poor performance particularly in Far East with reference to Indonesia and by-and-large in the world.

Chapter 5: Marketing cum Distribution Channels

The chapter discusses the various methods by which fruits are marketed around the world. Three major types of marketing channels of fruits: central wholesales markets, wholesale marketing areas and dis-aggregated markets, are discussed with reference to Kinow. The chapter also explains the structure of distribution channels of Kinow in Pakistan for local and international markets.

Chapter 6: *Export Promotion*

This chapter briefly explains the major export market promotion activities and expenditures. It also highlights the role of branding.

Chapter 7: *Packaging*

This chapter discusses in detail the importance of packaging role in the decision making process in the industry. Chapter 8 also explains and discusses functions of packaging. The various types of packaging available in the international markets are also discussed with side-by-side comparison of types of packaging being used in Pakistan for Kinow exports. The chapter also highlights the packaging exiting packaging constraints in Pakistan.

Chapter 8: *Price Trend*

Chapter 9 briefly explains the role of prices in the different marketing channels, in relation to the direct selling to the retailers, wholesale markets and chain stores. The value chain of Pakistan Kinow is also discussed. Price trends of different leading Kinow (mandarin) exporter are also analysed briefly. This chapter also explains the role of market intelligence.

Chapter 9: *Factors Affecting International Fruits Marketing*

This chapter cast light on the major issues that affect the international fruits trade. Major non-trade barriers and natural protection are discussed. The chapter also points out the affects of export subsidies on the international fruit trade; reference to the probable future implication of WTO. This chapter also provides an analysis of the role of Horticulture Marketing Boards and also focuses on the importance of post-harvest technologies required in with relation to international quality standards.

Chapter 10: *Short-term Potential Markets for Pakistani Kinow*

This chapter presents the potential markets for Pakistan Kinow, which can be attained in the short-term. The chapter points out the countries with highest potential for Pakistani Kinow and highlights the importance and use of "time window" in the same markets. The UK and

Malaysian distribution and promotion activities are discussed under European & Far Eastern market scenarios respectively.

Chapter 11: *Procedures for the export of Kinow*

The Purpose of this chapter is to identify and analyze rules and regulations governing the export of Kinow. Weaknesses of the system and problems faced by exporters are also highlighted.

Chapter 12: *Interventions*

This chapter identifies, suggests and recommends the interventions required, at private, government and institutional levels in order to develop value chains of Kinow. The chapter briefly recapitulates the issues and constraints at growers', processors, exporters and institutional levels. In the later part of the chapter, role of SMEDA in order to develop Kinow value chains and required immediate interventions are also highlighted.

Chapter 13: *Kinow Production and Export Option Scenario*

This chapter sets and defines short, medium and long-term objectives and targets for Kinow exports. It also illustrates as to what alternate production and export options are available for Kinow exports in order to achieve set objectives and targets. In the end, required financial interventions and benefit of investments are presented in order to achieve desired objectives for the development of Pakistan Kinow value chains.

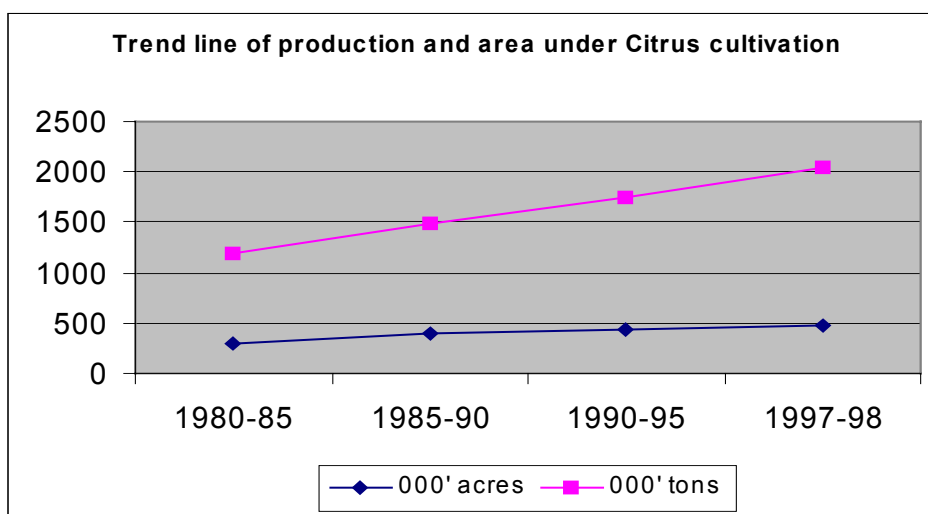
2. Chapter: Cultivation of Kinow

Topics discussed under this chapter are:

- 1) Current Status of:
 - a) Area under cultivation.
 - b) Production.
 - c) Yield per acre.
- 2) Pre & Post harvest losses.
- 3) Constraints of production.
- 4) Conclusion.

2.1. Kinow Production & Area under Cultivation

Kinow mandarin was introduced in Punjab from USA in the 1940's and currently, Kinow is considered as one of the major fruit produced in Pakistan. The season of Kinow lasts for four months i.e. from December 15th to April 15th. According to the report of Agriculture Statistics of Pakistan, Citrus cultivation in Pakistan has made great strides, particularly from 1960's onward. During the year 1975-80, production was 0.72 million metric tons and was cultivated on 186 thousand acres of land. Where as during the year 1997-98, Citrus fruit was cultivated on 484 thousand Acres of land and its production was more than 2 million tons annually.



Source: Agricultural statistics of Pakistan

Figure 1: Trend line of production and area under citrus cultivation

Above Figure 1 shows that during the last twenty years total production and area under cultivation has increased simultaneously.

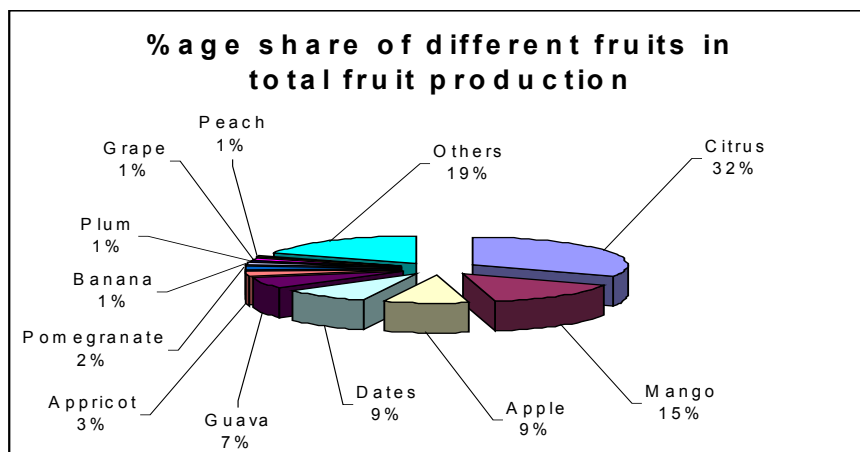
In Pakistan 187 varieties of citrus are available. However, most of them are still confined to the research stations. The commonly grown varieties are:

- a) Mandarin (Kinow, Early-fruiter)
- b) Oranges (Mosambi, Shakri etc)
- c) Others (Grapefruit,Lemons)

According to the agricultural statistics of Pakistan, during the year 1997-98, in terms of tonnage, 32 percent of total fruit produced was citrus, and it was 2037 thousand metric tons.

This production includes 1400 thousand tons of Kinow and remaining is oranges, lemons, grapefruits etc.

Following *Figure 2* shows the percentage share of different fruits produced in Pakistan.



Source: Agricultural statistics of Pakistan

Figure 2: Percentage share of different fruits in total fruit production

Citrus is grown in all four provinces of Pakistan but 95 percent of total Citrus plantations are in Punjab and that contribute towards 96 percent of total crop production.

In the province of Punjab, Sargodha, Rahim Yar Khan and Okara, are especially known for their Kinow orchards.

The provincial division of citrus plantation *Table 1* as follows:

Province	Area '000' Acres	Production '000' MT
Punjab	458	1947
Sindh	10	35
NWFP	11	38
Balochistan	5	17

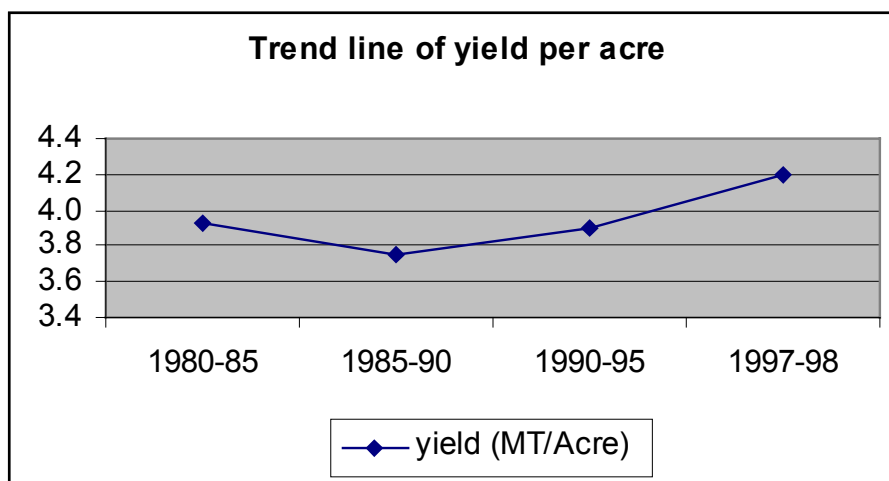
Source: Agricultural statistics of Pakistan

Table 1 : Provincial division of citrus plantation

2.2. Yield of Kinow Orchards

Pakistan holds 13th position in yield per acre among citrus growing countries of the world. According to Agricultural statistics of Pakistan during the year 1980-81 average yield per acre was 3.96 MT. Where as, present is 4.2 MT.

Figure 3 showing trend line of yield per acre of Kinow orchard as follows:



Source: Agricultural statistics of Pakistan

Figure 3: Trend line of yield per acre

Above graph shows that during the last two decades yield per acre of Kinow orchard does not show any significant improvement.

During the year 1998, if a comparison is made among top twenty different mandarin producing countries, we arrive at the following Table 2 table:

Country	Area Cultivated (^{'000'} Acres)	Production MT / Acres	Production (^{'000'} Mt)
World	9,332.8	6.7	62,915.6
Brazil	2,505.7	8.3	20,722.9
USA	824.1	15	12,401.0
Mexico	741.3	4.5	3,329.2
Spain	305.3	8	2,448.0
China	834.4	2.7	2,257.5
Pakistan*	484.3	4.2	2,037.0
India	321.2	6.2	2,000.0
Italy	274.4	7	1921.1

Iran, Islamic Rep of	282.7	6.2	1749.2
Egypt	205.1	7	1441.7
Morocco	126.8	8.7	1,103.8
South Africa	107.6	9.2	992.8
Argentina	135.9	6.8	920.7
Greece	96.1	8.5	813.6
Indonesia	236.2	2.6	613.8
Vietnam	166.7	2.3	379.0
Cuba	185.3	1.8	340.0

Source: FAO 1998

*= Agriculture Statistics of Pakistan 1997-98

Table 2 : Production, yield and area under cultivation of mandarin producing countries

The comparison shows that:

- (a) Brazil is the largest mandarin producing country with 20 million metric tons of production and 8.3 MT per acre of yield and accounts for 33 percent of world total production of citrus.
- (b) USA has the highest yield of 15 MT per Acre.

Pakistan is located at the same latitude as Florida and its acreage under citrus (Tangerine & Mandarin etc.) farming compares very favorably with that of Florida's bearing 382,900 acres. But Pakistan lag far behind Florida's in yield per acre. . This lack of improvement can be attributed to a number of poor harvesting practices, being used by growers.

2.3. Post Harvest Losses

There are two ways to increase the quantity of available commodity:

- (1) Produce more
- (2) Conserve what ever is produced

In Pakistan, much emphasis has been given to more growing, while the post-harvest aspect (i.e. conservation of crop after harvest) has been generally ignored. According to the report of Pakistan National Commission on Agriculture, defects and inadequate facilities in post-harvest handling transport storage and marketing cause up to 20-40 percent loss of fruit and

vegetables. This is true for Kinow as well and the value of this loss amounts to millions of rupees annually.

Pakistani Kinow is of high quality and can compete in international markets, but because of poor post-harvest handling operations and management, the quality of this produce deteriorates before it reaches its destination. Although large quantity of Kinow is exported, it faces tough competition in international trade and does not bring premium price and a good name for the country.

2.3.1. Causes of Pre & Post- Harvest losses

Following are the prominent causes of Pre & Post-Harvest loss of Kinow in Pakistan.

2.3.1.1. Poor Farm Management

At present in large proportion of Kinow orchards, trees are maintained in a very unscientific way, even the minimum level of crop-husbandry is absent. On the ground, trees are engulfed by weeds and obnoxious plants, which compete for soil, moisture and nutrients. Soil surface is generally hard and compact, having poor aeration for roots. Soil conservation practices are hardly followed. Trees have not been regularly or properly cleaned, pruned or trimmed. Dead and dry twigs provide a haven for harmful insects and diseases, which can cause irreparable loss. Practically no measures have been taken against pests. Feeding trees at regular intervals with balanced doses of organic and inorganic fertilizers is almost non-existent. In absence of irrigation water, trees often suffer from water-stress during the dry season. The unproductive sprouts on the base of the trunk are never removed. These sprouts take lion's share portion of the nutrients available to the plants. All these menaces combined make the trees sick and shorten their life span and lower their production.

Some modern farm management practices are enlisted in *Appendix---Kinow Farm Management*

2.3.1.2. Improper harvesting

Harvesting at the proper stage of maturity, the method of harvesting, and the handling operations are crucial aspects which determine the shelf life and quality of produce. In Pakistan, harvesting is generally done by hands and by those who are not aware of the

principles of fixing best harvesting dates and using fine techniques of handling the harvested product.

2.3.1.3. Absence of anti-fungal treatment

Absence of proper anti-fungal treatment to Kinow. The attack of microorganisms at any stage (pre or post -harvest) results in decay. Dipping of Kinow in TBZ and ABF, prior to storage reduce fruit rot significantly. Similarly use of anti-fungal wax emulsions like 'fruitex', 'Britex-561', and 'SB-65' also minimize the loss. However in Pakistan, most of the orchards are auctioned at a very early stage of fruiting, middleman who takes these orchards on auction generally do not invest in the use of anti-fungal treatment.

2.3.1.4. Delays in the lifting of harvested crop

After picking, fruit (Kinow) has to wait for long hours in open, before it is transported either to 'Sabzi-mandi' (for local consumption) or juice factories. This results in loss of moisture from the surface of produce through evaporation, transpiration, and respiration. Loss of moisture from the produce results in shriveling and loss of market value.

2.3.1.5. Poor non-refrigerated transportation

Fresh Kinow is generally transported by roads in Pakistan - using animal drawn carts, trolleys, trucks, or trailers, in which the fruit is mostly bulk loaded. None of these are refrigerated. In most cases roads are uneven and damaged, which causes mechanical damage to the produce due to vibration during transit. Moreover, the way the produce is packed and stacked is very haphazard. Under such conditions the shelf life and quality of produce is significantly reduced.

2.3.1.6. Below standard Fruit markets (Sabzi-mandies)

'Sabzi-mandies' handling and marketing horticultural produce like Kinow is another source of post harvest losses. Surveys of major fruit whole sale markets show that the hygienic conditions are extremely poor. Trading is done in open and the place is generally not clean, this results in deterioration of product and loss of value. Some exporters take the same fruit for export and send their consignments with or without processing to the international

markets. Kinow when reaches to the foreign buyer is poor in quality and presentation as a result it fetches very low price as compared to its competitors. Following pictures of Karachi Sabzi-Mandi (the biggest source of horticulture export from Pakistan) shows the poor condition under which Kinow is being handled.



Karachi Fruit Market

Animals and heaps of garbage are seen every where.

2.3.1.7. Absence of proper cold storage facility

Cold storage facilities are in general poor. In Pakistan there is no commercial Controlled Atmosphere (CA) cold stores. Very few Kinow processing units have their own storage facility and their capacity is very limited. Generally exporters and traders store their consignment in traditional cold stores available near fruit markets. These stores are working on primitive technology and that too, are operated by ill-trained staff. These cold stores are not capable of storing such a delicate fruit. Kinow after storage needs to be placed in a place where the temperature is gradually raised and atmospheric gasses are properly controlled, but the common practice is opposite to this. As a result fruit's skin absorbs water and gets softened, and thus loses value.

Following picture shows the poor condition of available cold storage.



View of Cold Storage used for storing Kinow

2.3.1.8. *Inadequate Packing*

Perishables go to waste due to inadequate packing, improper transport and lack of storage. It is true with Kinow, that become inferior in presentation and quality and thus losses its value in the international market.

Benefits of packaging is that the consumers should receive produce in a fresh condition with less damage, longer potential shelf life, and better eye appeal. Modern packaging has contributed to the improved handling and marketing of fruits in advanced countries. Benefits of improved packing are:

- (a) It protects against mechanical damage (bruising and abrasion during transit) & moisture loss (prevents shriveling).
- (b) It provides beneficial modified atmosphere (MA) conditions, which can extend shelf life.
- (c) It serves as an efficient handling unit.
- (d) It reduces the cost of handling, transport and marketing.
- (e) It facilitates the use of new modes of transportation.
- (f) It provides service and sales motivation.

How ever in Pakistan Packaging is very poor and does not serve its purpose. Exportable Kinow is generally packed in the vicinity of processing plants and Kinow for local consumption is packed either in the orchard or in packing houses adjacent to cold storage. Wooden crates made up of 'Sefada plant' wood are mostly used for exportable fruit, which has the capacity to hold approx. 8.5-kg net wt. of Kinow. Where as for the local consumption rough wooden boxes are used that has the capacity to hold 15 kg of fruit. These boxes can be labeled as unsophisticated form of packing, their presentation is poor and they don't have the ability to protect fruit against physical damage. Boxes for export are prepared with plates of 'Sefeda wood' through a very ancient method. Approximate cost of packing is \$ 36 per metric ton. Box because of their poor presentation plays a big role in fetching a very low price in the international market as compared to other producers.

Following picture shows the poor packinghouse facility being used for the packaging of exportable fruits and vegetables.



Packing House Facility

2.4. Constraints of production

Following factors are identified as major constraints of production.

- (a) Absence of training institutions that can guide growers to manage their orchards through the use of modern technology, for example, in Pakistan the concept of dense farming is not known to most of the Kinow growers. Kinow (citrus) orchards, on average, have 100 trees/Acre, whereas 180-200 trees are being planted internationally in orchards of orange.
- (b) Absence of disease treatment, as a result millions of rupees worth of fruit is lost because of fungus attack, black rot and other similar problems.
- (c) Heavy pre & Post harvest losses because of poor farm management practices (improper planting, pruning, fertilization, irrigation, spraying etc.), absence of proper roads and refrigerated transportation, lack of cold storage and transportation facilities, market gluts (because of short season of 120 days & un-organized harvesting) and poor hygienic conditions of fruit markets.
- (d) Lack of investment & research. No noticeable contribution is being made in genetics, towards the development of better yielding and marketable varieties for e.g. 'Seed Less variety of Kinow', that has a great market potential and can fetch high prices in the international market.
- (e) Weak linkages among growers, processors & exporters and above all advance sales of orchards to middleman at an early stage of fruiting further discourages the grower to take any initiative towards the development of crop.

- (f) Short harvesting season, because of which fruit remains on plant for short period of time and thus squeeze the international market. Pakistan runs plants for 135 days maximum, whereas Florida and Brazil run their plants for 210 days minimum.

2.5. Conclusion

Area under cultivation of Kinow and production per annum both have increased side by side, and at present 22 percent of total fruit produced is Kinow. In spite of this huge share of Kinow, there is no noticeable increase in yield per acre, in 1980-81 average yield per acre of citrus was 3.96 MT. Where as, present is 4.2 MT. Percentage share of exportable quality in total picked fruit also remained low. At the same time post-harvest losses are very high, according to an estimate 20-40 percent of fruit is destroyed every year.

Major factors responsible for the above morbid state are inappropriate planning strategies during planting, poor sanitation, poor farm management and lack of proper infrastructure for post harvest handling. In addition to the lack of technical know-how at growers' level specialized extension supports on Kinow cultivation are virtually not available. Research output is still in its infancy and the little work done by agricultural development institutions like, Agriculture University (Faisalabad), Agriculture Research Institution (Tando-Jam) so far, is extremely inadequate. Surveys have shown that our scientists have made no noticeable improvements in the genetic engineering and in so many years have not been able to produce better varieties or have not managed any organized plan to train growers in the field of better farm management. It appears as if our agriculture experts just believe in increasing areas under cultivation in order to have more crop and are not inclined towards saving of existing production from pre & post harvest losses. Each year millions of rupees worth of fruit is lost at different levels of transit from orchard to consumer, but no steps have been taken so far to improve the situation. There is a continued ignorance among growers, farm workers, managers, traders and exporters about the extent of the losses being incurred and their economic consequences.

Above all there is a lack of any coordination and sharing among different departments and organizations working with the same objectives of horticulture development. Some research work is being done by agriculture institutions, Agriculture research centers, horticulture department and different horticulture societies but there is no link between them and no sharing of experience, as a result the small work done is limited to books and is not shared.

Thus all groups of people involved in the fruit production and trading need to learn the basic principles of farm management and post harvest handling. In addition there is a strong need to

provide basic infrastructure like refrigerated transport, cold storage, processing, commercial scientific packing, and international marketing.

3. Chapter: Kinow Distribution & Marketing Channel

Topics discussed under this chapter are:

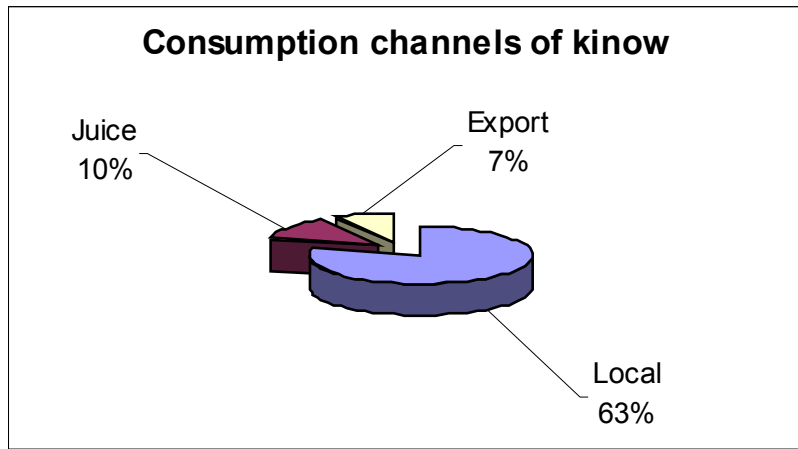
Current Status of:

- 1) Kinow Distribution & Marketing Channel.
- 2) Distribution & Consumption through wholesales markets.
- 3) Frozen concentrated Kinow Juice (FCKJ) manufacturing in Juice factories.
- 4) Waxing and processing of fresh Kinow for export to international markets.

3.1. Kinow Distribution & Marketing Channel: Current Status

Harvested Kinow is currently being marketed and consumed through the following three different channels, percentage share of each is given in *Figure 4*:

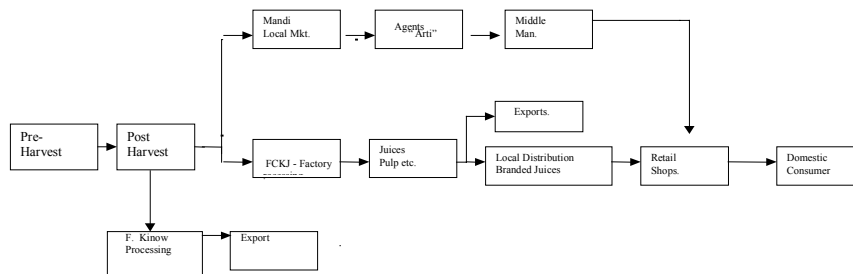
- (a) Distribution & Consumption through wholesale (Sabzi-mandi) markets.
- (b) Frozen concentrated Kinow Juice (FCKJ) through Juice manufacturing factories.
- (c) Export of waxed processed fresh Kinow to the international markets.



Source: SMEDA Survey

Figure 4: Consumption channels of Kinow

Survey conducted by SMEDA, has pointed out following Kinow value addition chain / distribution channels being used in Pakistan. Details of which are discussed under separate headings in the subsequent chapters.



3.2. Distribution & Consumption through wholesales markets

Wholesales markets of fruits and vegetables are commonly known as 'Sabzi-mandies', and these markets exist in almost every major city. These 'Sabzi-mandies' are generally divided into two portions. In one portion trading of fruits and in other trading of vegetables is done. Seasonal crops are brought mostly by middleman (Theka-i-Dar), and in some cases by grower himself in trucks or trolleys to the Place of auction, 'Aarat', specified in these markets. Here the commodity is auctioned and the price is mostly based on the principle of supply and demand. 'Arti' (Person who do auction) and 'pandi' (Loader) takes their percentage share from the total auctioned price. Generally 'Arti' receives commission at the rate of 2-3 percent and 'pandi' takes 2 rupees per bag for both loading and unloading of product. It is true for Kinow. According to an estimate approximately 63% of total available crop of A and B quality is being consumed locally through this channel.

The condition of these wholesales markets is pathetic and can be considered as totally unhygienic.



Picture shows the unhygienic Conditions Under which trading Of Kinow is being conducted.

In 'sabzi-mandi', most of the trading is done on ground, there is no standard packaging house and refrigeration facility. Cold storage that are present around these wholesales markets are based on old technology and are of inferior quality and have no ability to maintain the freshness of fruits and vegetables. Problems like frostbite, black rot and fungus are commonly seen in these adjoining cold storage, and this is because of lack of proper temperature control,

poor maintenance of gases especially nitrogen, oxygen, carbondioxide and ethylene and disease treatment. Cold storages are also overloaded with different kinds of crops, together at one place that have diverse temperature and gas mixture requirements.

Generally two type of traders make use of whole sale market, one is local fruit retailer and second is a small exporter. First group (retailer) get the fruit from the whole sale markets (sabzi-mandi) after auction and take it to different parts of the city on their personal carriers for selling it to the end consumers (house hold buyers). These retailers market their product with approximately 75-100 percent profit margins. Second group of small exporters either get fruit through auction or buys full loaded trucks after bargaining with both grower and 'Arti'. These exporters generally have small packinghouses near fruit market or they use others facility for packaging. They send their consignment generally in the beginning of the season through open top containers, when crop is abundant and temperature is low. These exporters mostly do dumping in the international markets; as a result value per metric ton that they receive is very low. This practice can be considered as an un-healthy competition with the superior exporters. It creates bad image in the international market because of its poor quality, absence of brand name and shabby packaging. Secondly because of excessive supply it pulls down the price of those exporters who are delivering quality product.

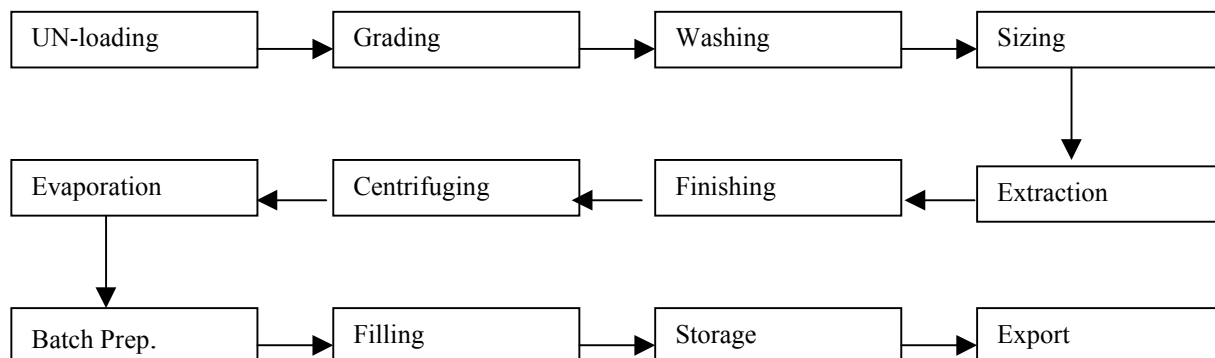
3.3. Frozen concentrated Kinow Juice (FCKJ)

Juice processing plants consume approximately 10% per season of the total available crop of Kinow. These processing factories produce a Kinow extract that is known as FCKJ (frozen concentrated Kinow juice). FCKJ is mostly exported to Europe and Far East, where it is used for the preparation of fruit juices. Kinow because of its unique taste and aroma when mixed with orange juice gives it flavor and better taste. Some times it is consumed by mixing it with alcohol, especially in European countries. It shows that this sub-sector has great potential for future exports if it is properly channeled. The quality of Kinow being consumed through juice factories is of B and C type. B & C type Kinow are of lower quality, either consumed locally as fresh or are delivered to factories for juice manufacturing. Major factories in this sector are mentioned in *Appendix--- List of FCKJ & Fresh Kinow Processing Plants*

The major components of juice processing plants are:

- ◆ Centrifuge machine
- ◆ Extractor
- ◆ Evaporator
- ◆ Pasteurizer
- ◆ Filling machine
- ◆ Batch tank.

The flow chart for the preparation of FCKJ is as follows:



According to industrial sources the cost of a citrus juice processing plant is approximately 6 to 8 million \$ (exchange rate of 1\$=52 Rs.used). An average juice processing plant produces 11.5 Brix (concentrate) juice with 50 percent juice recovery. In terms of frozen concentrated

Kinow juice (FCKJ) 83 kg of FCKJ is being produced out of one ton of fresh Kinow. Fresh Kinow is available at a price of approximately \$30 to \$60 per ton during the season. FCKJ contains 66 percent of solid contents/ concentrate (Brix). FCKJ is quite a valuable product and fetches very high price in the international market. Approximate international market value of FCKJ during the year 1999 was \$1000 to \$1100 per metric ton. Where as that of FCOJ (frozen concentrated orange juice) \$ 1200 to \$ 1500.

In addition to the basic product i.e. FCKJ, juice plants produce a number of by-products that are quite useful and valuable, for example Kinow peel oil (used in cosmetics), oil / water soluble aromas (used in juices), pulp and other organic residue (used in cattle feed) and other by-product that can be used for the preparation of alcohol and other industrial chemicals.

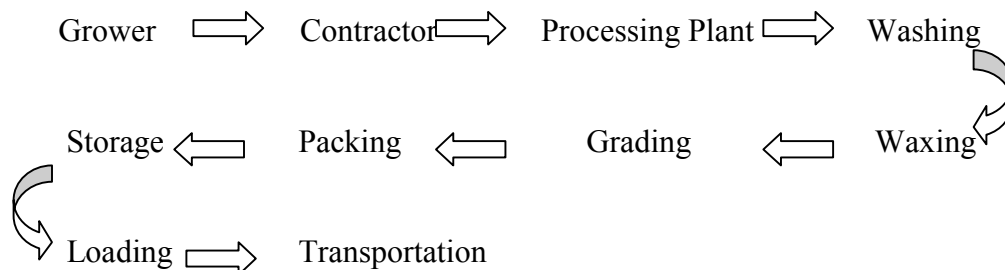
Most important thing to note in this case is, that the raw material for the juice industry comprises of low quality Kinow, that cannot be exported abroad and even in the local market these (C-category) are sold at a very minimal price for the consumption of customers belonging to the lowest income group. Therefore it can be said that juice plants prepare high value added product from the cheapest raw material and along with the basic product, high value by-products are also produced from the same cheap source. However because of weak planning, poor marketing and lack of cohesion with the international standards, FCKJ from Pakistan is not fetching a comparable price to its competitors.

3.4. Waxing and processing of fresh Kinow for export to international markets

Waxing and Processing of Kinow is done to maintain its freshness and to enhance its shelf life, According to an estimate shelf life is enhanced to 90 days provided 5-10 degree centigrade is maintained. At present fresh Kinow is being processed at both local and imported processing units (list of local & imported processing units is given in *Appendix--- List of FCKJ & Fresh Kinow Processing Plants*). These are concentrated mostly in Sargodha (Bhalwal) and Karachi. Most of these processing units are operating at 50-60 percent capacity. Kinow exporters generally maintain these processing units themselves and process fruit for their targeted export. Few processors offer services for others.

Processing includes washing, waxing, grading and sorting of Kinow (a detailed description of cost of processing is given in *Appendix--- Processing Cost Break-Up*).

Flow chart is as follows:



A brief review of different processes that takes place in processing units as follows:

3.4.1. *Washing*

Washing means removal of dirt and unwanted material from Kinow. It is done through automatic brushes and water sprinklers. Washing is followed by fungicide treatment, which is meant to control fungus infection.

3.4.2. Waxing

Two major factors responsible for the post-harvest deterioration of fresh Kinow are water loss and rapid rate of respiration. Waxing is the principal means of retarding this deterioration. Waxing of fruit surface adds shine, reduces water loss, lowers rate of respiration and ethylene production, thus delay senescence, improve external appearance and extend shelf life.

At present Kinow wax is quite expensive and is being imported mostly from USA in containers and is applied equally to the Kinow skin through wax spraying nozzles of processing plants.

3.4.3. Grading & sorting

Grading means sorting of fruit according to their sizes and removal of unwanted damaged fruit. Sizes are pre-fixed according to the international requirements. Generally international market demand ranges from the sizes between 36 to 48 pieces per 10-kg crate.

Same processes are being done at both imported and local plants and with almost same results. However the capital investment in local plants is approximately one fourth of the imported plant. Approximate cost of local processing plant, manufactured at 'Bhalwal', Sargodha is Rs. 1.6 million or US \$ 31,000.

3.5. Constraints of processing

- (a) Absence of research and development in Kinow production, as a result on one hand there is a small ratio of exportable quality (category A--Superior quality) per metric ton of crop produced, and on the other hand there is a lack of development in potential varieties, like that of seedless Kinow. Because of these limitations the farming cost is higher and international export volume and returns are low.
- (b) Existing processing capacity that can prepare product according to international standards is very limited. A large portion of exportable crop doesn't get processed according to international demands of washing, grading, waxing and packing. Because of which the product fetches lower price.

- (c) Most of the processing units lack cold storage facility to keep their waxed product. Along with this, refrigerated transportation as well as ordinary loaders are not easily available. This lack of refrigeration and transportation problems lowers the product quality and appearance because of physical damage.

- (d) There is a limited availability of reefer containers, and those that are available are very expensive. This increases the transportation cost to international markets, more demand and low supply gives strong bargaining power to the suppliers of reefer containers. So far no national company, e.g. PNSC owns reefer containers for this purpose.

- (e) No effort is being made to give marketing support for the promotion of fruit and vegetables export, individuals on their own cannot do international marketing because of its extremely high cost. At the same time because of loopholes in the export procedures (that will be discussed in the following chapter), real exporters have to face unhealthy competition from those who send low quality product, generally through open top containers and work on the principle of dumping. This lowers the value and makes the trade less attractive for those who are sending high quality value added product.

4. Chapter: International Markets and Marketing

In the preceding chapter of Production, it was mentioned that there are about 187 varieties of citrus fruits available in Pakistan, but only few varieties are grown commonly. The major families of Citrus included Mandarin, Oranges, Grapefruits, Lime & Lemons. Pakistan's Kinow belongs to Mandarin family - The reason for discussion of varieties and their corresponding families, at this point, is to address the following intrinsic discrepancy of the statistical data sources available.

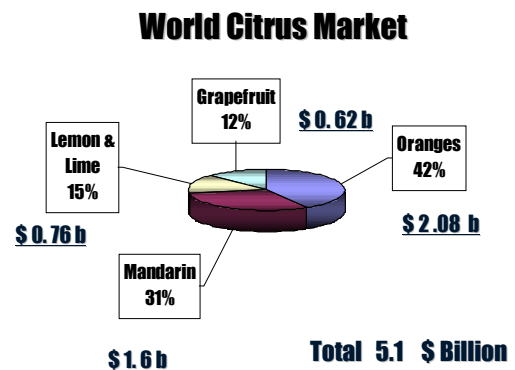
By-and-large, the sources of data available & reported divide Citrus trade into groups under subheads of Oranges, Mandarin-Tangerine-Clement-Satsma, Grapefruits & Lemons. All the trade regarding "Mandarin-Tangerine-Clement-Satsma" are grouped together under one category, therefore, it was difficult to separate-out only Mandarin trade.

Mandarin export from Pakistan is reported under the name of "Kinow", which is the local name for Mandarin Hybrid. However, in order to generalize, Kinow-mandarins-tangerines-clement & satsma will be grouped under the name of Mandarin in the following report.

4.1. World Citrus Market

Larger part of the world citrus imports accounts for Oranges with US\$ 2.08 Billion at 42 percent market share, leaving Mandarin being second major contributor with US\$ 1.6 Billion.

The following



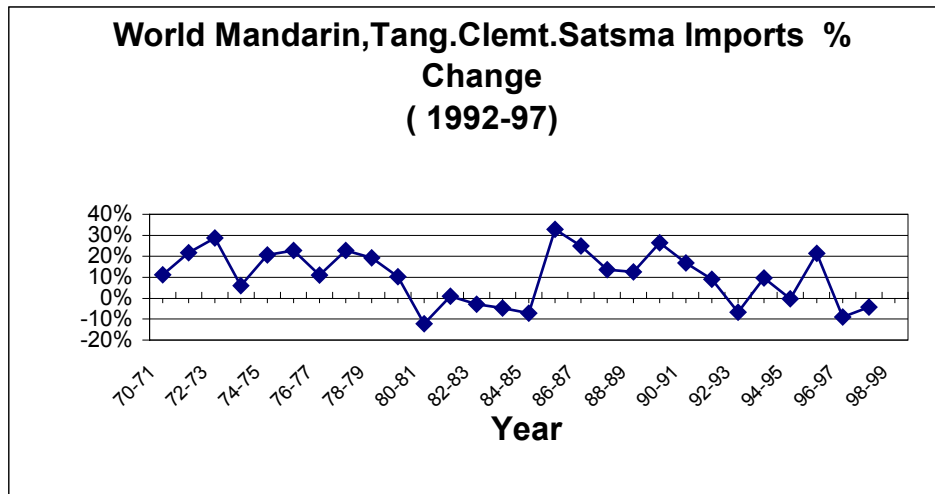
Source: FAO-1998

Figure 5 represents the world citrus market during the year 1997.

Figure 5: World citrus market

4.2. World Mandarin (Kinow) Trade

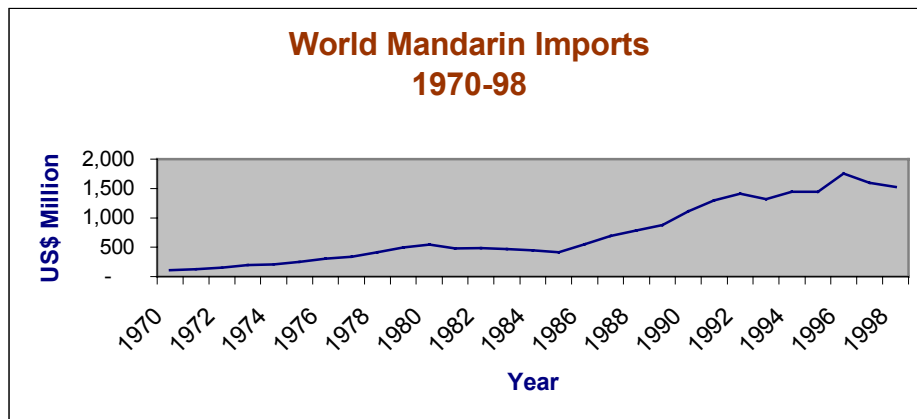
The Graphs and Tables below represent world Mandarin exports and imports trend. World imports of Mandarin presented in the following *Figure 6* shows a wave like trend from the



Source: FAO 1998

Figure 6: World Mandarin, Tang. Clemt. Satsma imports % Change

year 1970–1998. It may be noticed that in the year 1995-96 the world Mandarin imports has shown an increase of 21 percent which is the major increase in a single year since last jump of year 1990. The cumulative growth from the year 1970-1998 of world Mandarin imports shown in the *Figure 7* below represents (9 percent) growth trend.



Source: FAO 1998

Figure 7: World Mandarin Imports

However, the cumulative growth (compounded % change) during the last 7 years from 1992-98 represents 1 percent growth rate. This perhaps is not an alarming figure keeping in view of the past Mandarin import trends and world economic recession scenarios.

4.2.1. World Mandarin Imports & Exports

World Mandarin imports during the year 1996-97 represented in the following Table 3 has shown growth in terms of volume with the exception of developing countries. However, in spite of the fact that the volume of import has increased, the overall "value" of mandarin over the world has declined. This scenario suggests that:

1. Buyers may have large numbers of suppliers to buy from due to fierce international competition.
2. Suppliers may have been successful in either to harness or cut costs.
3. Suppliers may have compromised with quality standards.
4. Suppliers may have put Mandarin as loss leader and earn from some other product range.
5. Suppliers may be receiving subsidies.
6. Suppliers may have restricted exports to nearer (regional) destinations to save transportation cost.

Mandarin Imports (1996 & 1997)						
Region wise Value, Quantity & % Change						
Region			% Val.	Quantity 1997 (1000 MT)	% Qty.	Value (US\$/MT)
	1996 (1000 US\$)	1997 (1000 US\$)	Change		Change	
World	1,753,340	1,613,073	-8%	2,240	7%	720
Developed Countries	1,609,769	1,481,134	-8%	1,919	7%	772
Industrial Countries	1,463,971	1,337,446	-9%	1,536	6%	871
Europe	1,478,364	1,332,324	-10%	1,778	7%	749
EC (15)	1,264,895	1,126,458	-11%	1,337	5%	842
Asia	149,675	121,094	-19%	280	-14%	433
North & Central America	120,903	135,406	12%	124	14%	1,096
Developing Countries	144,807	131,939	-9%	273	-13%	483
Asia Developing	140,317	127,883	-9%	265	-14%	483
Far East	95,762	86,095	-10%	190	11%	453
Africa	1,225	1,262	3%	2	11%	818

Source: FAO 1998

Table 3 : Mandarin Imports 1996 & 1997

Mandarin Exports (1996 & 1997)
Region wise Value, Quantity & % Change

Region	1996	1997	% Val.	Quantity 1997	% Qty.	Value
	(1000 US\$)	(1000 US\$)	Change	(1000 MT)	Change	(US\$/MT)
World	1,797,517	1,604,078	-11%	2,453	10%	654
Developed Countries	1,435,114	1,245,538	-13%	1,688	12%	738
Industrial Countries	1,429,219	1,245,787	-13%	1,681	12%	741
Europe	1,343,462	1,158,578	-14%	1,573	12%	736
EC (15)	1,337,725	1,154,392	-14%	1,566	13%	737
Developing Countries	362,403	353,891	-2%	765	6%	462
Asia	213,008	210,378	-1%	515	8%	408
Asia Developing	180,376	179,950	-0.2%	481	11%	374
Africa	137,302	132,426	-4%	231	5%	573
Far East	110,111	112,606	2%	337	31%	334
North & Central America	40,556	36,281	-11%	40	3%	898

Source: FAO 1998

Table 4: Mandarin Exports 1996& 1997

If we look at the *Table 4*, we may notice that amongst Mandarin exporting regions of the world only Far Eastern region has shown growth both in terms of value and volume. This may be accounted for China's 10 percent growth in value and 33 percent increase in volume of mandarin exports during the same year represented in the *Table 5*.

Major Mandarin Exporting Countries (1996 & 1997)
Value, Quantity & % Change

Country Name	1996	1997	% Val.	Quantity 1997	% Qty.	Avg. Value
	(1000 US\$)	(1000 US\$)	Change	(1000 MT)	Change	(US\$/MT)
Spain	1,103,743	944,792	-14%	1,281	14%	737
Morocco	131,651	121,570	-8%	198	-2%	613
China	65,557	72,019	10%	204	33%	353
Netherlands	61,137	65,799	8%	84	21%	786
Turkey	53,066	47,605	-10%	110	-13%	434
France	38,273	34,938	-9%	43	17%	821
Bel-Lux	39,936	34,080	-15%	37	-8%	915
USA	36,907	32,889	-11%	34	4%	973
Italy	35,900	28,311	-21%	53	-6%	530
Germany	31,219	26,738	-14%	33	16%	811
Argentina	24,275	24,032	-1%	38	4%	626
Israel	24,737	19,000	-23%	29	-16%	655
Uruguay	17,679	17,857	1%	28	-9%	628
China,H.Kong	28,962	17,648	-39%	32	-38%	554
Australia	15,405	17,231	12%	14	7%	1,193
Pakistan	6,039	14,207	135%	89	117%	159
South Africa	5,434	10,856	100%	32	95%	339
Greece	15,310	10,271	-33%	24	-8%	421
Japan	7,646	6,238	-18%	5	-6%	1,354
Brazil	2,685	4,693	75%	9	23%	503

Source: FAO 1998

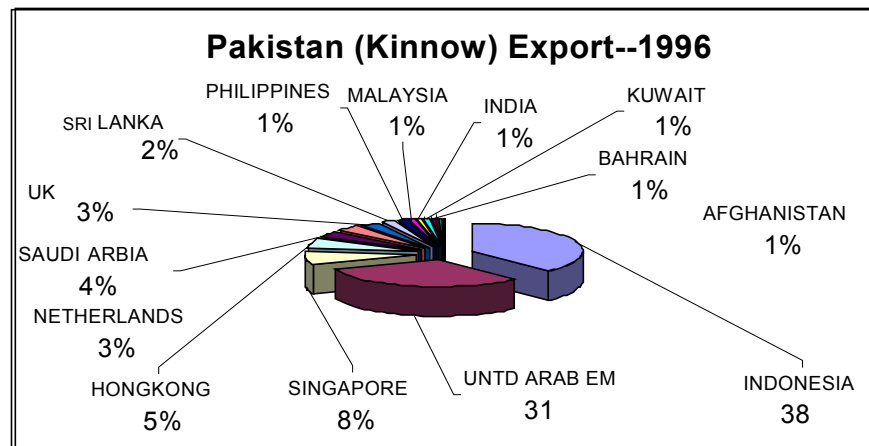
Table 5: Major Mandarin Exporting Countries

Interestingly Pakistan stands out with 135 percent growth in value and 117 percent increase in Mandarin exports volume during the same year 1996-97. These are the highest growth rates achieved by any single country during the above period followed by South Africa - with 100 percent value & 95 percent volume growth, Brazil - with 75 percent value & 23 percent volume growth and Australia - with 12 percent value & 7 percent volume growth.

Pakistan's remarkable growth achievement during the year 1996-97 is due to opening of new markets for Pakistani Mandarin in Indonesia and other Far Eastern countries. This can be seen in the following *Figure 8 &*

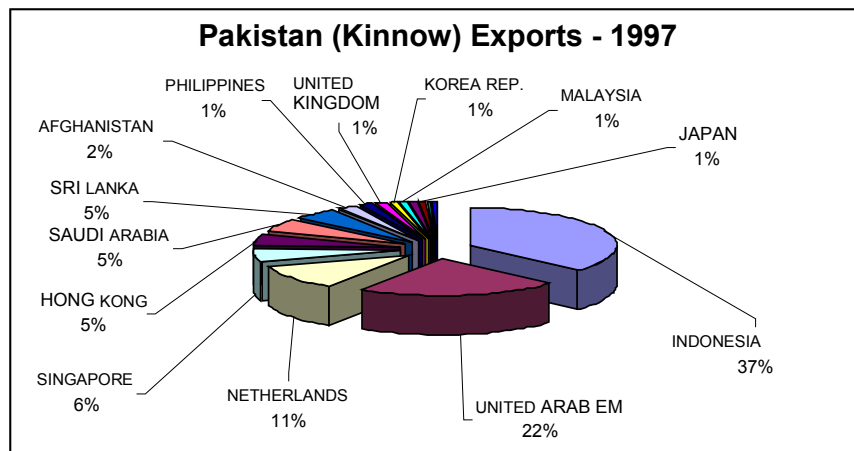
Source: ITC 1997

Figure 9 that 38 percent and 37 percent of Pakistan's total Mandarin exports accounted for Indonesian market during the year 1996 & 1997 respectively.



Source: ITC 1997

Figure 8: Pakistan Kinow export - 1996



Source: ITC 1997

Figure 9: Pakistan Kinow exports - 1997

But this achievement occurred for the time being and could not be retained longer by Pakistan as Pakistan Mandarin exports, reported by Pakistan's Federal Bureau of Statistics (FBS) 1999, show drastic drop from 89,000 metric tones in 1997 down to 51,000 metric tones in the year 1998-99. This huge drop in Mandarin exports resulted due to drop in Pakistan's exports to Indonesia, which can be seen, in the following *Figure 10 & Figure 11*

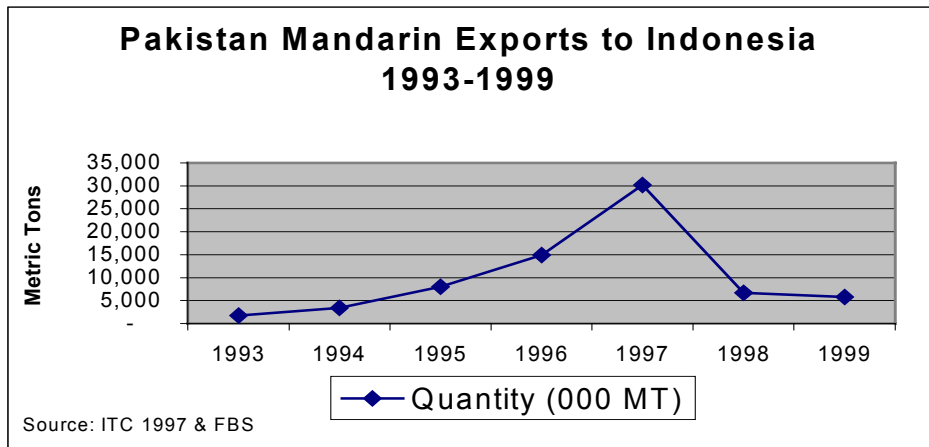


Figure 10: Pakistan Mandarin exports to Indonesia 1993-1999

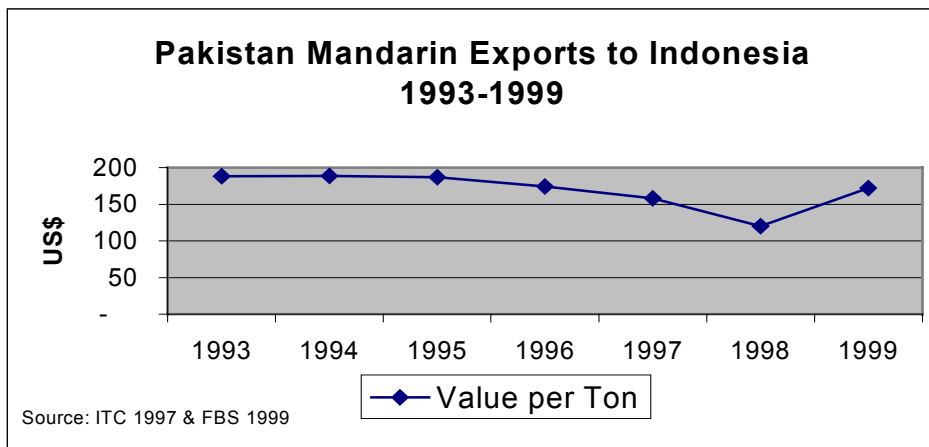


Figure 11: Pakistan Mandarin exports to Indonesia 1993-1999

It can be noticed from the *Figure 10* that Pakistan's Mandarin exports to Indonesia registered an upward trend from the year 1993 up-till 1997, but shows a huge dip in the year 1998, which flattened out in the year 1999. On the other hand *Figure 11* shows that Pakistan's Mandarin value per ton to Indonesia also dropped down by -36 percent from the year 1993 to US\$ 120 per ton in 1998. These drops in value & volume occurred during the same period however, the drop in volume was twice the drop of value at -78 percent down in the year 1998.

Volume of Mandarin export level gained by Pakistan up-till 1997 in Indonesia was due to considerable market expansion but rarely due to gaining any share from competitors. This can be seen in the *Figure 12* that Pakistan export volume in Indonesia equals with that of China's in the year 1996 but makes a big leap in the year 1997 and in result expands the total market volume.

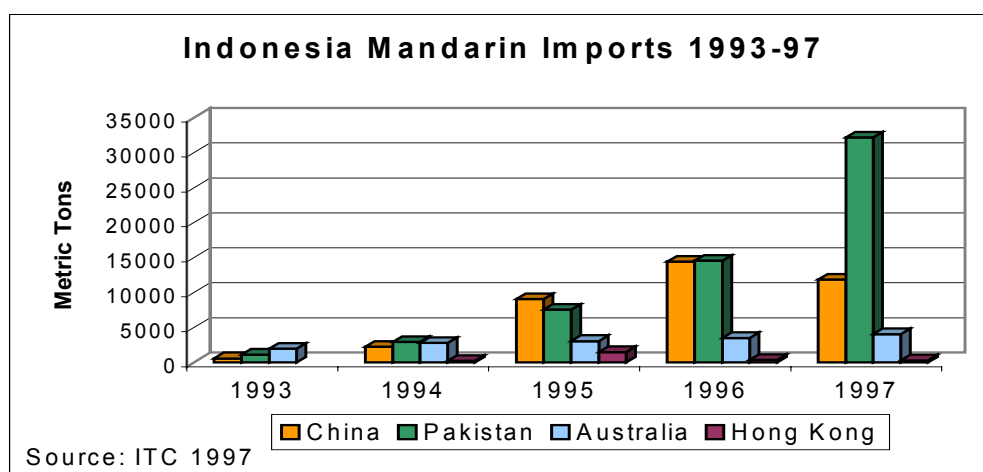


Figure 12: Indonesian mandarin imports 1993-97

It can be ascertain from the above that Pakistan's drop in Mandarin exports to Indonesia could be due to:

1. Suppliers' Compromise with quality
2. Economic recession in Indonesia

It is observed that even at a point in time when the volume of export to Indonesia was growing the value per metric ton was dropping. This may suggest that Pakistani exporters

kept on cutting prices at the expense of quality, which eventually resulted in huge drop of exports. However, it may be noticed that export volume of Mandarin to Indonesia in 1999 flattened out almost to the same level of 1998, whereas the export value shows up-ward and positive trend. This whole scenario of Indonesian market reflects that lost export level could be achieved if exporters stop compromising with quality.

In the absence of current data on Mandarin imports by Indonesia for the years 1998-99, it is assumed that either Indonesia's total Mandarin import volume may have declined during the year 1998/99 or Pakistan's lost market share has been grabbed and filled-up by some competitors.

4.2.2. *Mandarin Export Markets*

In-spite of the fact that world Mandarin import has registered 8 percent overall drop in terms of value, there are some countries, which has shown an up-ward trend in both value and volume.

If we look at the *Table 6*, we can notice that Japan stands-out with highest percentage of Mandarin imports with 46 percent and 76 percent increase in value and volume in the year 1996-97 respectively, followed by USA, Italy, Slovenia, UK, Malaysia, Indonesia and Poland. These markets pose challenge to competitors and act as potential world markets for new entrants.

Major Mandarin Importing Countries (1996 & 1997)
Value, Quantity & % Change

Country Name	1996 (1000 US\$)	1997 (1000 US\$)	% Val. Change	Quantity 1997 (1000 MT)	% Qty. Change	Avg. Value (US\$/MT)
Germany	389,333	320,194	-18%	406	-1%	789
France	327,538	283,403	-13%	323	9%	877
UK	182,687	194,914	7%	204	7%	957
Netherlands	98,499	85,651	-13%	115	5%	743
Canada	85,802	79,604	-7%	81	1%	988
Bel-Lux	75,965	64,395	-15%	81	0%	799
USA	34,679	55,340	60%	42	54%	1,314
Italy	44,799	48,839	9%	55	42%	893
Russian Fed	42,523	41,600	-2%	127	31%	329
Sweden	42,273	40,330	-5%	46	11%	877
Switzerland	43,387	38,368	-12%	41	10%	925
Austria	33,879	29,008	-14%	41	-3%	715
China,H.Kong	35,622	28,737	-19%	51	-20%	569
Poland	26,205	28,503	9%	98	4%	292
Finland	31,733	28,394	-11%	32	9%	884
Czech Rep	28,913	26,069	-10%	52	16%	501
Norway	24,742	24,109	-3%	23	13%	1,070
Indonesia	18,629	18,693	0%	52	50%	358
Denmark	21,020	17,249	-18%	21	8%	815
Saudi Arabia	16,371	16,371	0%	44	0%	370
Singapore	21,304	16,337	-23%	23	-17%	713
Jordan	16,000	16,000	0%	45	0%	356
Malaysia	14,256	15,000	5%	43	25%	349
Slovakia	11,982	11,040	-8%	22	6%	510
Ireland	10,163	9,620	-5%	9	1%	1,131
Japan	5,590	8,155	46%	7	76%	1,248
Slovenia	7,296	7,798	7%	12	12%	639
Untd Arab Emirates	12,200	7,600	-38%	27	-40%	281

Source: FAO 1998

Table 6: Major mandarin importing countries 1996 & 1997

According to USDA 1999 report on "world fresh citrus situation" total fresh citrus exports in 1999/2000 are forecast at 7.4 million tons, up 16 percent from the 1998/99 volume. Increases in U.S. orange and Spanish orange and tangerine exports are expected to account for much of this increase. The brief discussion on individual countries reported by USDA 1999 presented below provides current statistical data on Mandarin and Oranges export and import

4.2.2.1. Japan

Japan's total citrus imports in 1999/2000 are forecast to increase by 10 percent to 488,000 tons. Imports of fresh oranges are forecast to rebound by 70 percent in 1999/2000. It is assumed that this rebound shall account for supplies of California Navel (Orange Hybrid) from USA, which has recovered from the previous year's freeze. Imports of oranges and

mandarins from Spain, South Africa, and Mexico all increased to fill the gap left by the Lower California harvest in 1998/99.

The market share of the United States of the Japanese citrus market is generally between 75 percent and 90 percent for oranges, lemons, and grapefruit. However, there is an increasing competition from Australia and South Africa in the fresh orange market. Suppliers in competing countries tend to ship after the main growing season for U.S. oranges, South Africa generally supplies Navels and Valencias to the Japanese market from July through September, while Australia ships the same product from July through November. Japan maintains ban on Citrus imports without Vapor Heat Treatment (VHT). Mandarin imports by Japan during the years 1993-97 are provided in the *Table 7* below.

**Japan Mandarins and similar citrus hybrids Imports--
1993-1997 (MT)**

	1993	1994	1995	1996	1997
Korea		17	66	46	95
Taiwan	210	261	181	78	107
Netherlands				3	
USA	1,302	7,188	6,274	3,239	5,253
Chile				22	899
Kenya			4		
New Zealand	78	134	416	321	178
TOTAL	1,590	7,600	6,940	3,711	6,532

Source: USDA 1997

Table 7: Japan mandarin imports 1993-97

4.2.2.2. Italy

Italian imports of citrus continue to increase, with a positive trade balance remaining only in oranges. Italian citrus continues to face strong competition from Spain. Most Italian imports are from Morocco, Spain, and other Mediterranean countries and are transshipped through other EU countries. Italy maintains a ban on imports of non-EU citrus, other than grapefruit, due to phytosanitary concerns. Mandarin imports by Italy during the years 1993-97 are provided in the *Table 8* below.

**Italian Mandarin Imports, including similar Citrus Hybrids
1993-1997 -- Tons**

Major Countries	1993	1994	1995	1996	1997
Spain	12,751	36,259	41,725	32,377	47,907
France	2,868	4,830	3,305	4,143	4,564
Germany	437	451	528	1,098	1,468
Netherlands	326	55	261	850	578
Sweden					44
United Kingdom	19		46		41
Belgium	143	2			24
TOTAL	16,582	41,725	45,929	38,623	54,679

Source: USDA 1997

Table 8: Italian mandarin Imports 1993-97

4.2.2.3. *United Kingdom*

UK import of Mandarin has shown overall growth during the past years. The major suppliers of Mandarin to UK are listed in the *Table 9*. The largest supplier of Mandarin to UK is Spain with 54 percent of total UK Mandarin market share. Spain has also maintained its continued increase in exports of mandarin to UK with compounded average growth of 2.1 percent from the year 1993 to 110,240 metric tons in 1997. Whereas, Pakistan has registered 32 percent drop from the year 1996 to 435 metric tons in the year 1997. According to Pakistan Federal Bureau of Statistics 1999, Pakistan exports of mandarin during the year 1998-99 have further registered a drop of 14 percent to 375 metric tons in the year 1998-99 and attained only 0.2 percent UK market share.

**UK Mandarins Imports, including Similar Citrus Hybrids-
1993-1997 -- Tons**

Major Countries	1993	1994	1995	1996	1997
Spain	99,201	105,906	90,946	90,495	110,240
South Africa	10,235	14,690	13,122	19,458	16,660
Turkey	5,261	7,482	14,591	22,853	15,813
Morocco	12,033	7,574	10,639	10,527	11,654
Uruguay	5,696	9,416	6,439	9,743	10,330
Argentina	4,063	4,132	4,441	6,626	8,634
Israel	3,607	2,556	5,895	8,498	8,413
Cyprus	1,538	1,904	3,858	5,617	5,858
Netherlands	4,972	3,463	6,584	7,496	5,069
Zimbabwe		58	298	141	2,234
United States	927	2,470	1,165	3,215	2,011
France	1,921	3,971	2,919	2,916	1,994
Jamaica	998	953	1,023	982	757
Pakistan	58	42	212	643	435
Swaziland	253	623	1,396	1,946	388
Italy	1,099	732	1,057	1,742	350
TOTAL	152,568	167,262	167,078	196,146	203,691

Source: USDA & Market Asia 1997

Table 9: UK mandarin imports 1993-97

4.2.2.4. *Spain*

Spain is the world's largest citrus exporter, accounting for nearly 50 percent of total Northern Hemisphere exports. Citrus exports are expected to increase by 15 percent in 1999/2000 due to the increased supplies of oranges, tangerines, and lemons. The bulk of these exports go to traditional European markets such as Germany, France, the Netherlands, and the United Kingdom (USDA 1998).

Orange and tangerine production is forecast to increase by 10 and 15 percent, respectively. Favorable weather conditions, mainly rains at the end of the summer and early fall, contributed to the higher crop. Total area for citrus in Spain remains roughly the same. In recent years, Spain's tangerine sector has garnered higher prices relative to oranges both on the domestic and international market.

5. Chapter: Marketing cum Distribution Channels

Fruits exhibit diversity resulted in a large number of methods by which fruits are marketed. In turn "off-farm" factors have as much influence on what the producer receives for his products as what "on-farm" factors do.

The marketing channels of fruits from farmer to consumers in a region may vary in their complexity. During a regional survey conducted in 1987 in 12 APO (Asian Productivity Organization) member countries¹ three types of marketing cum distribution systems were identified; central wholesale markets, wholesale market areas and disaggregated markets.

5.1. Central Wholesale Markets

The marketing system, which is centered on a central wholesale market, (see *Figure 13* for simplified flow). This type prevails in China, Indonesia, Japan and Korea. Trading of produce is done either through auction or negotiation. The produce is sold to assemblers, shippers or farmers' cooperatives and is brought to commission agents or wholesalers in the central wholesale markets, which is further sold through auction or negotiation. With this operation, local shippers and or farmers' cooperatives increase shipment to the market whenever they think that wholesale prices are favorable and vice versa. Buyers at wholesale markets behave in a like but opposite manner to the local shippers and or farmers' cooperatives. Thus, a common price is determined at various sections of the market system. This is the indicator of a rational market situation. The price gap between markets is equal to the transportation costs of the commodity between the markets under a rational market situation.

¹ The 12 countries were China, Pakistan, Hong Kong, India, Indonesia, Iran, Japan, Korea, Nepal, Philippines, Sri Lank and Thailand.

Simplified General Marketing Channel for Fruits & Vegetables in Selected APO member Countries

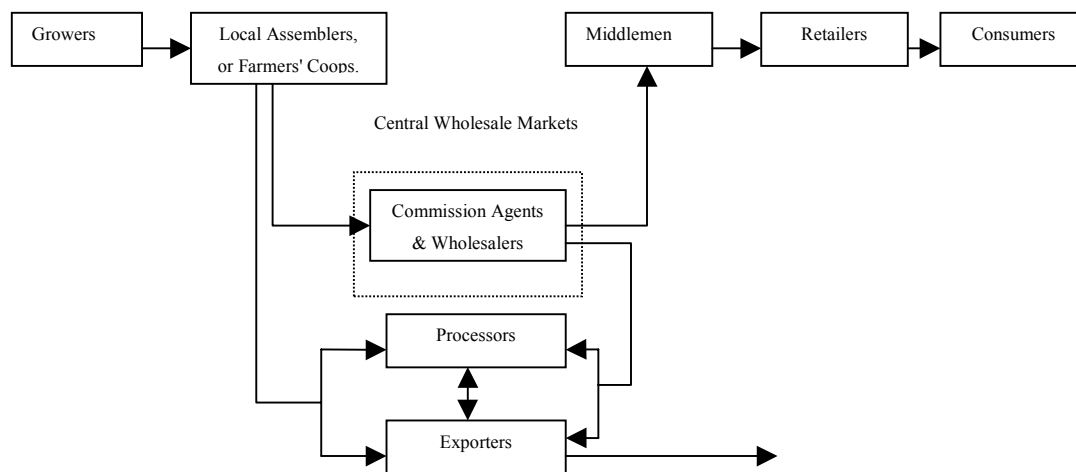


Figure 13: marketing channels for fruits & vegetables

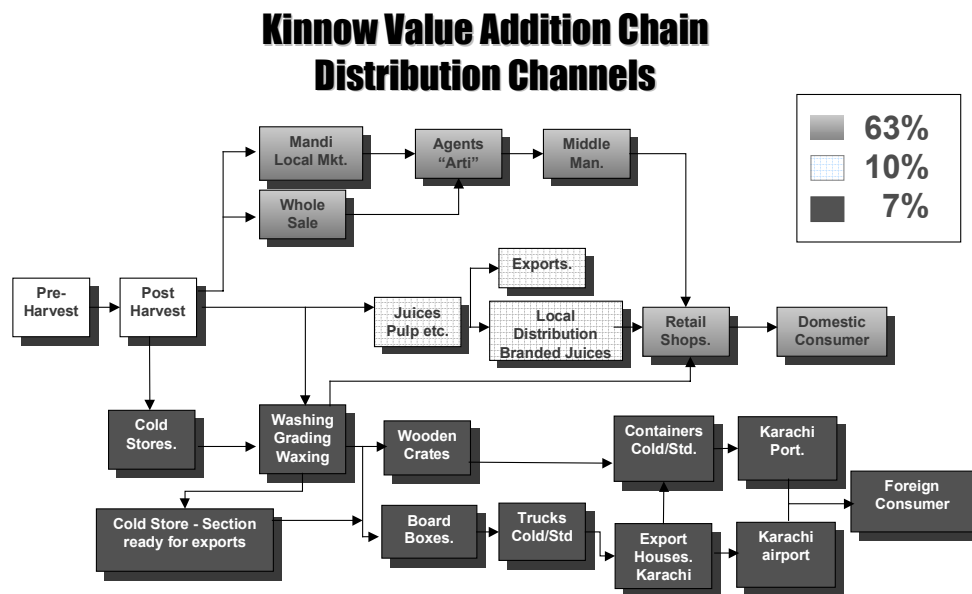
5.2. Wholesale Market Areas

The second is characterized by the absence of a real central wholesale market. Trading takes place in old traditional market places located in capital cities. These market places often called "bazaars" have been expanded to assume the role of wholesale market areas. Examples were found in Manila and Bangkok. Typically, in this system several price levels for a commodity are set at any one time. The system is very complicated making it difficult to determine the main flow of goods and to identify at what stage in the marketing channels the price was set.

5.3. Disaggregated Markets

The third type of marketing channel is typically found in Pakistan, Nepal and Sri Lanka. The marketing channels varied according to the size of farms and their distance from large cities. Small farmers generally brought their produce to nearby markets and sold them to retailers or directly to consumers. In the case of larger-sized farms their produce was sold through middlemen either after harvest or under pre-harvest contract arrangements.

The distribution channels of mandarin in Pakistan for local and international markets can be seen in the following *Figure 14*



Source: SMEDA field survey 1999

Figure 14: Kinnow value addition chain

Local distribution channels of Kinnow have already been discussed in detail in the previous chapter of Production. Much of the produce pass through local distribution channels and consumed locally whereas only 10 percent and 7 percent of the total Kinnow produce goes through the channels of Juice Processing and Processed Fresh Kinnow respectively. Almost all the processed fresh Kinnow is exported apart from few test trails of leading processors to sell processed Kinnow in the upper-end of local retail shops. This amount has been estimated to 0.001 percent of the total processed fresh Kinnow.

Major part of Pakistan Kinnow export marketed in the international wholesale markets as follows:

5.4. Market Distribution Channel

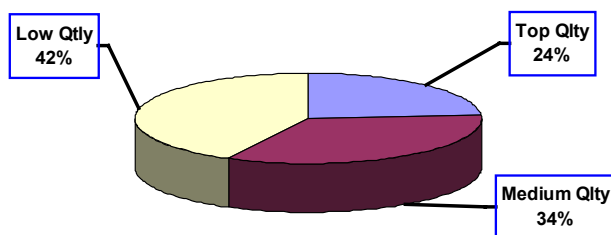
Middle East: Auction in Wholesale Markets from where the buyer further distributes the product into the retail shops.

Europe & Far East: Through Fixed buyers. These buyers, either have their own retail shops or arrangements with wholesale market.

Generally all the Kinow exports from Pakistan are carried under direct buying system. The exporters make an effort to establish contacts with foreign buyers on one to one bases. Dubai market is perhaps the one where Kinow exports from Pakistan are made exactly like local distribution channels. During the Kinow season, Pakistani Kinow floods Dubai market. There are about three major types of exporters operating in this region from Pakistan. First type includes exporters with processed fresh Kinow in standard cardboard boxes shipped through refer containers. Second type pack processed Kinow in low quality wooden crates and ship them through non-refer containers during early to mid of the season and third type include exporters with non processed Kinow shipped through open-top containers in poor quality wooden crates. See *Figure 15* for break up of different quality exports of Kinow from Pakistan.

Breakup of Different Quality Kinow Exports from Pakistan in the year 1997

Category	Approx. Exp. Qty	% share of Categories	Approx. FOB	Total Value \$
Top Qlty	21,235	24%	230	4,883,935
Medium Qlty	30,005	34%	159	4,770,716
Unprocessed	37,761	42%	120	4,531,320
Total	89,000	100%	159	14,185,971



Based on SMEDA Field Research: 1999

Figure 15: Break-up of different quality Kinow exports

Increased low quality supply results in rock bottom prices. The Dubai market is so glutted with Pakistani low quality Kinow that many quality conscious regular exporters have abandoned this market due to unhealthy competition from poor quality Pakistan Kinow exporters with comparatively very low prices.

The export houses mentioned in the *Figure 14* are merely unloading, repackaging and loading places owned and operated by either exporter themselves or other private players. These private owners of such locations and places provide services to re-pack and re-examine products transported from far places into Karachi for onward transportation to final export destinations. Above-mentioned locations starve cold storage facilities.

6. Chapter: Export Promotion

World Mandarin imports over the years has shown steady growth in terms of volume but will continue to face stiff competition in major importing markets. Many exporting countries have announced ambitious export goals and have oriented their export programs to attract larger numbers of small- and medium-size firms to exporting.

The chief export policy tools employed by exporting countries are: direct export subsidies, export market promotion (development) programs, export credit and credit guarantee programs, and statutory marketing boards.

6.1. Major Export Market Promotion Activities:

Export market promotion activities are widespread in developed and, to a lesser extent, middle-income countries. In many countries, governments work as partners with agricultural, food processors. In some countries, producers finance the bulk of the promotions, while in others, the government is more active in financing the promotions. Often, producer financing is accomplished through statutory fees on sales or exports. However, government assistance to export market promotion is "green box" (not subject to discipline under the WTO Agreement on Agriculture).

Export market promotion encompasses a wide range of activities, including:

6.1.1. Advertising on radio, television, in print media and Internet web sites

This includes generic ads designed to reinforce an image for all products from a country, such as New Zealand's campaign promoting its food as natural, and ads for individual commodities and products. This activity often includes compilation and printing of major national "Supplements" in target countries at special occasions such as the "National Day" or the visit of the head of state or similar high level dignitaries.

6.1.2. Trade Shows Participation.

These include major international shows such as ANUGA or FOODEX as well as smaller exhibitions sponsored by individual countries in a foreign market. Trade show participation is an important way to introduce new products to a lot of buyers and make new contacts. Most countries facilitate the participation of their exporters and producer associations in trade shows, often absorbing some of the costs.

6.1.3. Public Relations

Includes food editors' columns, event sponsorship and other "free" advertising.

6.1.4. National Branding

This involves promotion of a national brand name, such as "Australia Fresh" which independent exporters are allowed to use on their products, usually for a fee. Often, these are associated with specific standards, which must be met before the brand name can be used.

6.1.5. In-store Promotions

These include activities geared to food retailers and wholesalers or restaurants in the importing country, including the provision of promotional and display materials and recipe guides. Samples are often given out in supermarkets. Juice tasting is a common promotion tool for juices.

6.1.6. Trade missions and reverse trade missions

Trade missions are visits by exporters to the importing country. Reverse trade missions are invitations to foreign buyers, including trade delegations to the exporting country to visit producers, processors or packers and to visit with important public or private sector officials.

6.1.7. Technical assistance

This can range from invitations to specialists to attend training courses or related technical seminars in the exporting country to demonstrations in the importing country to facilitate the use of a specific commodity.

6.2. Estimated Market Promotion Expenditures:

Expenditures on market promotion activities for agricultural product exports by 28 agricultural nations² studied by USDA were estimated at just over \$ 924 million in 1996/97. Government allocations account for about 32 percent of promotion expenditures, while producer and industry assessments and other fees made up the remaining 68 percent (\$ 624.8 million). Market promotion by EU countries was estimated at \$ 364.6 million in 1996/97, while expenditures for other major exporting countries totaled an estimated \$ 559.3 million

6.2.1. *EU export market promotion expenditures:*

The year 1997 show a similar distribution between government and industry financing as last year's report; about 41 percent government and 59 percent industry. Total export promotion funding, not including export subsidies, was also similar; \$ 364.6 million this year compared to \$ 350.2 million last year.

Primarily producer/marketer assessments and user fees finance the central marketing and promotion associations in European countries such as Germany, Netherlands and France. Market promotions by Spain and Greece are predominantly government-financed. UK and Italian government expenditures, both national and regional, are on a similar level with those of agribusiness in the financing and development of export promotions.

6.2.2. *Other exporters' market promotion activities*

Among the other exporters, Australia, Canada and New Zealand have strong national government promotion agencies and rely heavily on their statutory marketing boards to carry out market development activities for producers of specific agricultural products. These quasi-governmental agencies generate most of their promotion funds from producer and industry levies and from retained earnings, but also receive some funding from their respective governments. Australia and New Zealand have significantly increased their export promotion expenditures in recent years, particularly in Asia and in Latin America.

² 28 foreign countries chosen were Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Spain, and the United Kingdom Argentina, Australia, Brazil, Canada, Chile, China, India, Japan, Korea, New Zealand, Norway, South Africa, Thailand and Turkey Hong Kong, Malaysia, Mexico, Singapore and Japan

The aggressive promotional campaign of kiwi fruit in Europe by New Zealand has created an exemplary market place for New Zealand kiwi. Famous multinational advertising agencies were hired to conduct advertising and promotional activities. It is the same case with Jafa brand from Israel for Citrus, which has become a quality mark for citrus fruit.

The Australian government continues its support for small- and medium-size firms through its Export Market Development Grants Scheme. The Canadian national and provincial governments also are marshaling scarce funds to assist producer boards and smaller companies. Switzerland and India's governments cover most of the costs of their export promotion activities. Government assistance for export market promotion of agricultural products is relatively low in Argentina, Brazil, Chile, China, Japan, Korea, Thailand and Turkey.

6.2.3. *Future directions for export promotion*

European countries are increasing their promotion activities in Asia and Latin America, as well as in Eastern Europe. In the case of Latin America, this strategy is complemented by efforts to negotiate free trade agreements. Recently announced changes to the laws governing New Zealand's corporations and promotion boards could encourage the boards to be more accountable to their producers. South Africa is developing a new export promotion strategy now that its export subsidies have ended.

The authorities and export-related practices of statutory marketing boards and export credit/credit guarantee programs also are important policy tools for exporting countries.

6.3. Kinow Brand Name

Pakistan Kinow exporters have neither realized nor have learned from the past experiences of others, for example; the Australia's apple and pear exporter case, and are still confusing the prospective Kinow buyers with plethora of brand names.

Kinow from Pakistan is being exported with no prominent brand name, with few exceptions exporters send the product with different brand names each year and therefore make no efforts

to maintain the quality of the product. International buyer's demand graded, properly waxed and packed fruits. If there is a quality, they never hesitate to pay high values. But because of present practices Kinow exporters not only fail to get good price for their own product but also injures the overall market and lower the image of the Pakistani Kinow.

Switching between brand names is a common practices with Kinow exporters safe very few major Kinow exporters. During SMEDA survey it was revealed that if an exporter receives complains of quality the next shipment is then made under different brand name and buyers are deceived.

So far no steps have been taken to involve any international advertising agency to promote Pakistani Kinow in the international markets, as a result our market share is far behind its real potential. Private sector lack resources to organize an appealing marketing campaign.

7. Chapter: Packaging

Packaging plays a key role in the decision-making process at the floor level: the more visible the packaging concept, the greater the impact.

Packaging fresh fruits is one of the more important steps in the long and complicated journey from grower to consumer. Bags, crates, hampers, baskets, cartons, bulk bins, and palletized containers are convenient containers for handling, transporting, and marketing fresh produce. More than 1,500 different types of packages are used for produce in the U.S. and the number continues to increase as the industry introduces new packaging materials and concepts. Although the industry generally agrees that container standardization is one way to reduce cost, the trend in recent years has moved toward a wider range of package sizes to accommodate the diverse needs of wholesalers, consumers, food service buyers, and processing operations.

Packing and packaging materials contribute a significant cost to the produce industry; therefore it is important that packers, shippers, buyers, and consumers have a clear understanding of the wide range of packaging options available. Modern produce packaging can be custom engineered for each commodity to extend shelf life and reduce waste.

7.1. The Function of Packaging or why to Package Produce?

A significant percentage of produce buyer and consumer complaints may be traced to container failure because of poor design or inappropriate selection and use. A properly designed produce container should contain, protect, and identify the produce, satisfying everyone from grower to consumer.

7.1.1. Containment

The container must enclose the produce in convenient units for handling and distribution. The produce should fit well inside the container, with little wasted space. Small produce items that are spherical (such as Kinow) may be packaged efficiently utilizing a variety of different package shapes and sizes.

7.1.2. Protection

The package must protect the produce from mechanical damage and poor environmental conditions during handling and distribution. To buyers, torn, dented, or collapsed produce packages usually indicate lack of care in handling the contents. Containers must be sturdy enough to resist damage during packaging, storage, and transportation to market.

Because almost all packages are palletized, containers should have sufficient stacking strength to resist crushing in a low temperature, high humidity environment. Although the cost of packaging materials has escalated sharply in recent years, poor quality, lightweight containers that are easily damaged by handling or moisture are no longer tolerated by packers or buyers.

Produce destined for export markets requires that containers to be extra sturdy. Damage resulting from poor environmental control during handling and transit is one of the leading causes of rejected produce and low buyer and consumer satisfaction. Fresh fruit has its own requirements for temperature, humidity, and environmental gas composition. Containers should be *produce friendly* - helping to maintain an optimum environment for the longest shelf life. This may include special materials to slow the loss of water from the produce, insulation materials to keep out the heat, or engineered plastic liners that maintain a favorable mix of oxygen and carbon dioxide.

7.1.3. Identification

The package must identify and provide useful information about the produce. It is customary (and may be required in some cases) to provide information such as the produce name, brand, size, grade, variety, net weight, count, grower, shipper, and country of origin. It is also becoming more common to find included on the package, nutritional information, recipes, and other useful information directed specifically at the consumer. In consumer marketing, package appearance has also become an important part of point of sale displays.

Universal Product Codes (UPC or bar codes) may be included as part of the labeling.



The UPCs used in the food industry consist of a ten-digit machine-readable code. The first five digits are a number assigned to the specific producer (packer or shipper) and the second five digits represent specific product information such as type of produce and size of package. Although no price information is included, UPCs are used more and more by packers, shippers, buyers, and Example of a UPC retailers as a fast and convenient method of inventory control and cost accounting. Efficient use of UPCs requires coordination with everyone who handles the package.

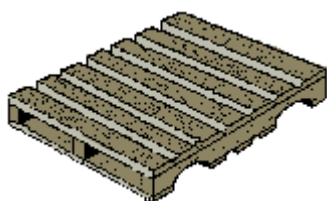
7.2. Types of Packaging Materials

Packing material includes the followings:

7.2.1. Wood Pallets

Literally form the base on which most fresh produce is delivered to the consumer. Pallets were first used during World War II as an efficient way to move goods.

Mostly the pallets are built as inexpensively as possible and discarded after a single use. Over the years, the 40-inch wide, by 48-inch long pallet has evolved as the unofficial standard size. Standardization encourages re-use, which has many benefits. Besides reducing cost because



they may be used many times, most pallet racks and automated pallet handling equipment are designed for standard-size pallets. Standard size pallets make efficient use of truck and van space and can accommodate heavier loads and more stress. Depending on the size of produce package, a single

pallet may carry from 20 to over 100 individual packages. Because these packages are often loosely stacked to allow for air circulation, or are bulging and difficult to stack evenly, they must be secured (unitized) to prevent shifting during handling and transit. Although widely used, plastic straps and tapes may not have completely satisfactory results. Plastic or paper corner tabs should always be used to prevent the straps from crushing the corners of packages.



Plastic stretch film is also widely used to secure produce packages. A good film must stretch, retain its elasticity, and cling to the packages. It helps protect the packages from loss of moisture, makes the pallet more secure against pilferage. However, plastic film severely restricts proper ventilation. A common alternative to stretch film is plastic netting, which is much better for stabilizing some pallet loads, such as those that require forced-air cooling.



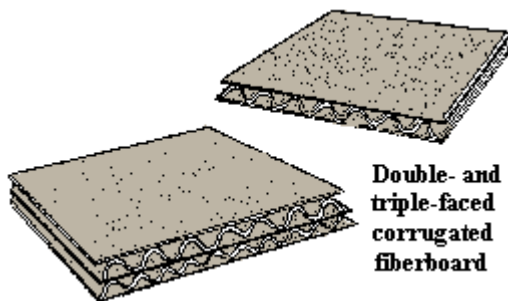
7.2.2. *Wooden Crates*

Wooden crates once extensively used for oranges, apples, stone fruit etc., have been almost totally replaced by other types of containers. The relative expense of the container, a greater concern for tare weight, and advances in material handling has reduced their use to a few specialty items, such as expensive tropical fruit. However, the 8-10 kg wooden crates are still being used in Pakistan for Kinow exports.



7.2.3. *Corrugated Fiberboard*

Corrugated fiberboard (often mistakenly called cardboard) is manufactured in many different styles and weights. Because of its relatively low cost and versatility, it is the dominant container material in the western world and will probably remain so in the near future.



Most corrugated fiberboard is made from three or more layers of paperboard manufactured by the Kraft process. Double-faced corrugated fiberboard is the predominant form used for Fruit containers. It is produced by sandwiching a layer of corrugated paperboard between an inner and outer liner (facing) of paperboard. The inner and outer liner may be identical, or the outer layer may be preprinted or coated to better accept printing. The inner layer may be given a special coating to resist moisture. Heavy-duty shipping containers required to have high stacking strength may have double- or even triple-wall construction.

Fruit export around the world is being packaged in fiberboard, with the exception of few, whereas in Pakistan the most preferred packaging for Kinow and other fruits is wooden crates. These crates are being made from the "poplar" trees extensively grown in Pakistan; therefore, the cost of these wooden crates in Pakistan is much lower than compared to the corrugated fiberboard containers. A 10-kg wooden crate in Pakistan cost from Rs.14 to 16 whereas the same size corrugated fiberboard would cost from Rs.34 to 45. The reason for higher price of corrugated fiber containers is:

- Non-availability of required quality paperboard in Pakistan for manufacturing of such containers.
- Economy of scales; seasonal trade of Kinow and small size exporters with small quantity orders could not bargain with manufacturers of fiberboard containers.
- Multiple brand names from exporters also reduce the chances of mass production of container and thus give up the opportunities of receiving bulk discounts.
- Local paper industry does not produce heavy weight paper required for the manufacturing of internationally acceptable standardized quality fiberboard containers.
- Local fiberboard container manufacturers do not keep ready stock imported high quality paper since they would have to pay heavy taxes and duties on it.

At present the large exporters of Kinow are importing the corrugated fiberboard containers from UAE. The said exporters clearly mention make of these imported corrugated fiberboard containers and in doing so they make an assertion of quality packaging. The benefits to Kinow exporters are:



**Imported corrugated
fibreboard container**

- Pakistan government provides subsidy on the imports of corrugated fiberboard container for packaging of fresh fruits and vegetables. Under SRO 18, duties and taxes are waved against re-export.
- The UAE suppliers have ready stock of high quality material for manufacturing of fiberboard containers and therefore, make any quantity.

- The material so incorporated in manufacturing of fiberboard is available duty free to UAE manufactures and therefore supplies fiberboard containers from UAE are relatively lower in price as compared to Pakistan.

The standardized packaging regarding corrugated fiberboard standards can be seen in *Appendix--- Standardization of Packaging*

7.2.4. Rigid Plastic Packages

Packages with a top and bottom that are heat formed from one or two pieces of plastic. Plastic box is gaining in popularity because they are versatile, provide excellent protection to the produce, and present a very pleasing consumer package. Plastic boxes are most often used with consumer packs of high value produce or items that are easily damaged by crushing. Molded polystyrene and corrugated polystyrene containers have been test marketed as a substitute for waxed corrugated fiberboard.

At present they are not generally cost competitive, but as environmental pressures grow, they may be more common. Heavy-molded polystyrene pallet bins have also been introduced and being adopted by a number of growers as a substitute for wooden pallet bins. Although at present their cost is over double that of wooden bins, they have a longer service life, are easier to clean, are recyclable, do not decay when wet, do not harbor disease, and may be nested and made collapsible. As environmental pressures continue to grow, the disposal and recyclability of packaging material of all kinds will become a very important issue.



Photograph: Courtesy of Arif Overseas Traders

Plastic Box used for Kinows

In Pakistan Plastic buckets / boxes are rarely used for Kinow exports, however, there are few exporters which are equipped to supply their produce in plastic boxes. The type and shape of plastic boxes being used by a Pakistani exporter of Kinow can be seen here. The Plastic box can hold from 10 to 12kg of Kinow.

The price of plastic box is higher than that of fiberboard containers. A plastic box cost Rs.55 as compared to 14 and 34 for wooden crates and fiberboard containers respectively.

8. Chapter: Price Trend

Seasonality of harvesting and marketing and hence significant seasonal variation of prices for consumers is also important consideration in Kinow marketing. Pakistan Kinow have short production cycle. The volume and value ratio of Kinow varies with degree of perishability, which influence the capability and profitability of storing.

In many international markets, chains³ dominate retailing, which acquire an increasing proportion of their supplies directly from the growers. In this, central markets become residual markets for growers who can't sell directly, and for chains to "top-up" and source special requirements.

The perceived advantages of purchasing through a central market are the availability of range of quantity and quality, and the presence of so many sellers, which leads to enhanced competition. Central markets enable the quick identification and solution to market shortfalls and surpluses. In contrast direct buying has the perceived advantages of fresher produce; more consistent quality; enhanced integration and hence enhanced economies in purchasing, delivering, stockholding and promoting; less competition; known price, quality, grade, quantity and delivery period. Growers participate in direct selling because of the perceived advantage of the certainty of selling a specific volume at a known price reduces their off-farm risk. Chains do use central markets but as a residual mechanism for topping-up, information searching, and specialized produce purchases. Under these conditions the central markets are treated by both chains and direct selling growers as a dumping place for low quality produce and surplus high quality produce.

For Kinow growers the chain development has a number of aspects. On the one hand, direct buying favors larger growers and grower groups capable of supplying the higher volumes. On the other hand there are number of dangers for growers. First, custom growing and contract growing tends to make harder for new entrants to break into the market.

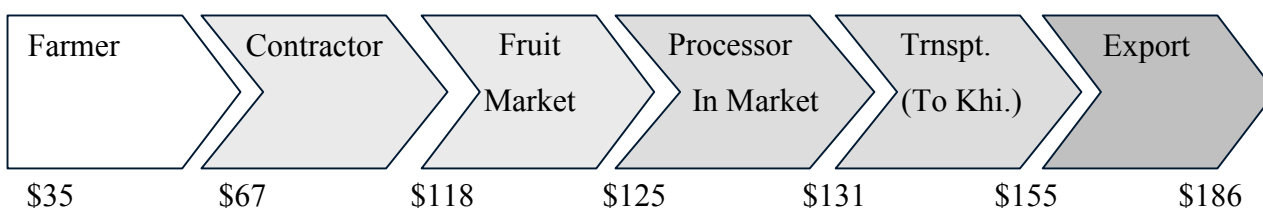
³ The term "chains", "supermarkets", "multiples", and "hypermarkets" are treated synonymously.

Direct sellers of fresh produce should be aware that in a number of developed countries direct selling of processed fruits has resulted in fewer producers, larger holdings, increased mechanization and greater crop specialization. Second, the elimination of smaller specialist retailers reduces buying competition. Third, if the central market receives a disproportionate share of lower quality produce, the price of low quality produce will be driven down. This increases the distance between the high price of quality produce and low price for lower quality. Usual price behavior is for the low price to drag down the high quality price not the high price to lift the lower price.

Prices received by Pakistani growers, middleman, wholesalers, processors and exporters are presented in the following Kinow value chain;

8.1. Value Chain of Kinow

Below value chain reflects local values gained at different stages for unprocessed fresh Kinow. The values are calculated in US \$ @ Rs.53=\$, in Metric Tons. It must be noted that the following values and costs, presented in *Figure 16* below, incurred at different stages are gathered during survey and interviews with leading exporters of Kinow.



Source: SMEDA Survey 1999

Figure 16: Kinow value chain

From above figure it can be noticed that minimum export price is about US\$186 per Mt. Whereas, the total Pakistan exports of Kinow reported by FAO 1997, (see *Table 5*) that for the year 1997 is 89,000 metric tons, which had only fetch average price of US \$159 per metric tons amounting to total **US \$ 14 millions**. This is the lowest return value gained by any major mandarin exporting country during the year 1997. The prices gained at each stage in the value chain do not justify the average export price received by the exporters. This could be due under reporting or non-reporting of data during exports of Kinow from Pakistan. This is the

case with non-processed Kinow exports and it is believed that cost of processed Kinow will be much higher than that of non-processed. The non-processed, processes and proposed value chains are discussed in chapter: Interventions under Pakistan Kinow production and export option scenarios.

The following *Table 10* shows the international export prices of Kinow mandarin for various countries as compared to Pakistan.

Mandarin Price (\$ / MT)

	1993	1994	1995	1996	1997	1998
Spain	742	742	897	991	737	672
Morocco	332	361	550	648	612	613
Turkey	427	415	364	421	434	426
Egypt		354	344	423	298	393
China	483	435	446	431	350	293
Pakistan	118	147	127	144	159	129

Source: FAO 1998

Table 10: Mandarin Price (\$ / MT)

It may be notice that Spain's export price averaged US\$ 796 per metric ton over the period from 1993 -1998. This has been the maximum price achieved by any mandarin exporting country. The year 1997& 98 has shown a downward trend of value for Spanish mandarin exports, however, it is still gaining the highest price in the world. On the other hand, Morocco and Turkey both show a continuous, though slow, growth in terms of value from the year 1996 to 1998. Unfortunately, Pakistan could never achieve "even" the half of the average price of the top mandarin exporting countries. The Spanish mandarin price compare to Pakistan is about 5 folds higher, in-spite of the fact that Pakistan Kinow has richer flavor, color and taste than Spanish mandarin varieties. The scenario portrays a disappointing picture but yet it provides us with a benchmark and the opportunities available in terms of value which Pakistani Kinow may achieve in the future.

8.1.1. Market Intelligence

Two major types of marketing intelligence are prices reporting on the domestic market and export marketing intelligence.

8.1.1.1. Price Reporting

Efficiently operating markets require the free flow of market information. Fruit marketing can be made more efficient by the provision of a price reporting services. In terms of information it is recognized that efficient marketing also requires data on production forecasts, market off-take, processing inventories and exports.

Ideally, a price reporting system should produce timely, unbiased relevant information. Price reporting at one end provides timely data to growers which is used for making marketing decisions relating to timing of harvest, timing of dispatch to market and actual market destination and on a longer term information for production decisions. On the other hand export market intelligence provide useful data for better marketing decisions; preferred shipping times for specific markets and activities of competitors.

Price reporting may be done based in price discovery mechanism being through private negotiation rather than auction. Price from the central wholesale markets is collected daily.

Following data must be recorded:

- species of variety of the product
- package size
- price range for about 90 percent of all product presented for sale
- most sales price range for about 80 percent of the product sold in the quoted price range
- some definition of supply in terms of "good", "fair", "moderate"
- some definition of daily demand in terms of "good", "moderate", "fair" and "slow"

Products are defined by distinguishing characteristics, which attract price differentials.

Common characteristics are:

- colour
- origin, usually by state or region within state

Another form of providing market intelligence, specifically for international markets, can be through the Horticulture Export Board. Here officers are based in the main port of entry for their country's exports. Their task should be to inspect as many loads as possible of products delivered into the market and note what are the quality problems and monitor the progress of products through the distribution chain.

9. Chapter: Factors Affecting International Fruits Marketing

Major factors affecting the international trade in fruits are:

- (a) Non-trade Barriers
- (b) Natural Protection
- (c) Export Subsidies
- (d) Horticulture Marketing Boards
- (e) Single Desk Marketing
- (f) Post-Harvest Technology
- (g) Standardized Cold Storage

9.1. Non-trade Barriers

Anderson (1983)⁴ predicted that some countries' national goals of food self-sufficiency and the desire for rural-urban income parity could only be achieved by increasing agricultural protection. This was because the process of industrialization in those countries will only intensify their comparative disadvantage in agriculture. Whilst not disagreeing with Anderson it is recognized that overt protection is becoming increasingly unacceptable. Instead, countries are protecting their fruits and vegetable growers from imports by using non-trade barriers and assisting their exporters other than by direct subsidies.

Protectionist measures need not to be obvious ones of tariffs and quotas. Non-trade barriers against fresh fruit imports include:

- phytosanitary and quarantine standards
- display, packaging⁵ labeling and advertising requirements

⁴ Anderson, K. (1983) "Economic Growth, Comparative Advantage, and Agriculture Trade of Pacific Rim Countries", *Review of Marketing and Agriculture Economics*, 51:3, 231-248

⁵ Even though cold sterilization can be done in bulk, the requirement that cartons contain ventilation holes, supposedly to ensure chilling, adds unnecessary packaging costs.

- storage and transport requirements
- lengthy and expensive testing to assess the absence of quarantine risk⁶ and projective sampling requirements

The non-trade barrier of quarantine has the potential to be increasingly used as a protectionist measure. Most countries have their own quarantine requirements for different pests as well as their own quarantine standards. There can be procedural differences⁷ or different barrier levels⁸. The main target pest is fruit fly.

9.1.1. Quarantine Treatments

There are 3 major international quarantine treatments for pests of quarantine significance. The first is chemical treatment. Ethylene dibromide, methyl bromide, and phosphene are used as fumigants. Chemical treatments suffer from increasingly unacceptable residue levels. However, US Environment Protection Agency and other ban ethylene dibromide like bodies.

Second quarantine approach is physical treatment. One stream of physical treatment uses heat as the disinfesting medium. Variations include cold sterilization, hot water dipping, and fluidized bed heating. Heat treatment has a number of problems. However, many tropical products have poor cold tolerance, effectively ruling out cold sterilization. At the same time, hot water dips can damage product. Mitchell (1987)⁹ reported that there could be some problems in achieving an even heat transfer with large produce.

⁶ Separate testing can be required for different varieties of the same products, even different colored fruit of the same variety.

⁷ United States, for example, requires Probit 9 security or 99.9968 percent mortality at a statistical probability of 5 percent, that is no survivors from tests on 100,000 insects. In contrast Japan requires Probit 8.719 or no survivors from 30,000 insects, but the tests must be three replicates each of 10,000 insects.

⁸ For example, Japan distinguishes between prohibited imports deemed to be hosts of injurious diseases and pests, and products requiring phytosanitary certification.

⁹ Mitchell, G. E (1987). "Food Irradiation and Meat Research in Canada an USA". Study Tour Report, QS87016, Brisbane, Queensland: Queensland Department of Pimary Industries.

Third quarantine treatment is to use irradiation and vapor heat. Irradiation process involves exposing product to gamma rays. Vapor heat disinfestation involves raising the temperature of the product to a level, which kills all life-stages of the target insect. Appropriate temperatures are in the range 43⁰C - 55⁰C. The process may use saturated or dry air.

With little in the immediate future to address issues of quarantine security it is expected that countries wishing to protect their agricultural industries to resort increasingly to non trade barriers of sanitary regulation especially pest quarantine. Further, with a high predilection towards quarantine target pests, being tropical country Pakistan can expect that the quarantine issue can be used increasingly against her.

9.2. Natural Protection

Natural protection can be defined as protection offered by the cost of transport and the perishability of the product.

George (1980)¹⁰ noted two points. First reverse seasonally. Regional agricultural production is bisected horizontally by the Equator. Primary products produced north of the Equator at one period of the year are not produced south of the Equator at the same time. Increasingly, north-south fruit trade into Europe and North America is capitalizing on this phenomenon. Second, post harvest preservation. When preserved through canning, drying or freezing, the preserved product can be viewed as close substitute to the fresh product. Because the imported product's c.i.f. price acts as a ceiling on domestic price of fresh products, preservation acts as a natural protector with c.i.f. costs constituting the extent of the natural protection. Using mainly temperature and humidity, developments in post harvest preservation, especially shelf life extension, have been dramatic over the past years.

Increasing post harvest preservation has a number of ramifications for trade. First the perceived gap in quality between "fresh" and "preserved" is disappearing. Any natural

¹⁰ George, A. (1980) "Politics of Agriculture Protectionism in Northeast Asia: the Japanese Experience" in Anderson, K., and George, A., eds, *Australian Agriculture and newly industrializing Area: issues for research*. Australia - Japan Research Center, Canberra.

protection offered by perceived quality differences is reduced. Indeed, preserved fruits are now being actively promoted in terms of convenience because they can be semi-prepared, blanched, frozen, washed, peeled, and enhanced healthiness because they can have reduced salt, reduced fat, low added sugar and greater fiber. Second, post harvest preservation has reduced the inter-seasonal supply variations. Controlled atmosphere (C.A.) stores has enables nearly 3 to 4 months supply of Kinow. Third, the natural protection offered by transport. If the transport mode is air then the natural protection barrier is enhanced with respect to costs but reduced with respect of timeliness. From the time of introduction of fresh Kinow processing in Pakistan and because of shipping containers offering a higher degree of controlled environment compared with air, sea freighting rather than air freighting has become the preferred method of transport for Kinow.

The above suggest that natural protection offered by reverse seasonally has decline in relevance and there are increased opportunities for export of fresh processed Kinow.

9.3. Export Subsidies

Under the Uruguay Round Agreement, direct export subsidies (price reductions) were disciplined. The United States, the European Union (EU), and other developed countries must reduce their export subsidies over 6 years by 36 percent of a 1986-90 base period subsidy value and 21 percent of base period volume. However, the recently held Seattle Round, in December 1999 has initiated talks for another term for further reduction of subsidies. Although, Seattle Round completed with any concrete implications but it can be it can be established that further reduction in subsidies shall be observed in the near future.

Many EU agricultural product exports benefit from the EU's direct export subsidies and compete for market share through price. The EU's 1997 budget allowed for export subsidies for fresh fruits and vegetables were \$89 million. However, in spite of the EU's large expenditures for export subsidies, their reduction under the GATT 1994 is causing some EU member countries to rethink their price-based marketing strategies. Increasingly many countries in the world are being forces to reduce subsidies due to budgetary constraints.

The above suggests that there are increasing opportunities for Pakistan Kinow exports due to continuously increasing reduction in subsidies by most of the EU and other competitor countries.

9.4. Horticulture Marketing Boards

The producers of exporting nations such as Australia, Canada and New Zealand sell many of their horticulture products through marketing boards. Many of these boards have exclusive control over the export marketing of their designated products. Some also are authorized to make long-term sales contracts with the governments of importing countries. Some of the Australian and New Zealand boards are authorized to enter into joint ventures with firms in importing countries

Most of the statutory marketing boards conduct advertising and promotion activities and are particularly effective at generic promotions (advertising and retail promotions, trade servicing and technical assistance) and offer or guarantee export credit. These boards also conduct typical sales activities such as retailer discounting, negotiation of shelf space in retail stores, sales agreements with producers and processors, and credit financing.

9.5. Single Desk Marketing

There have been a number of outstanding examples of successful single desk selling of horticulture products; ACREXCO and the Israeli Citrus Marketing Board from Israel, OUTSPAN and CAPE from South Africa, and various marketing boards from New Zealand.

Single desk marketing imposes some discipline on the market in terms of limiting the number of brands for the one product from the one country. Australian apple and pear exporters were accused in the past of confusing the European market with a plethora of brand names whereas their competitors from New Zealand and South Africa had far fewer brands on the market. A direct result is that today Australian apple and pears are relatively few compared to those of South Africa and New Zealand. However, learning from experience, Australian Horticultural Corporation (AHC) has developed "**Australia Fresh**", the national umbrella brand for fresh Australian horticultural products, to promote sales in Asia. The logo will appear on fruit

cartons and labels and point-of-sale material to help exporters build and maintain a market presence for Australian fruits.

Market discipline is exercised by having panels of wholesalers and retailers who market to a price set by the single desk. Part of the panelist arrangements is that there should be competent market intelligence. Panelists are advised about shipment sizes and arrival times. Concomitantly, when markets become glutted, the panelist system ensures a slowing down of supplies.

Israel's AGREXCO has had great success exporting avocados to France, some of the lessons from its success are the need to invest in research and development, the need to pay considerable attention to logistics, and the need to establish a quality assurance program. Above all AGREXCO has shown the importance of continuity of supply.

Single desk marketing may accompany weaknesses. Israel's Citrus Marketing Board (CMBI) illustrates the danger of single desk seller becoming a commodity trader. It was reliable supplier of large volumes of citrus at a standard quality. In the face of competition from new suppliers of other types of citrus, lower costs and flexible marketing CMBI became subject to price selling. To change, CMBI had to radically alter its thrust by introducing new varieties, varying the style of packing, introducing continuous cold chain, unitizing the transport and handling system, and custom packing. Many look to the New Zealand success of its kiwi fruit as an example. Whatever promotional activities were associated with the kiwi story it must be recognized that there was a strong technological basis. With correct storage, kiwi fruit can maintain their quality for nearly ten months.

One lesson from the kiwi story relates to market research. Traditional market research concentrates quite correctly on the consumer: for example, consumer taste panels are utilized to assess sensory perceptions. However, with perishable products it is argued that equal attention must be paid to the physical infrastructure of the distribution system, especially the cool chain. Further, institutional arrangements such as non-tariff barriers and the method of selling by competitors must be examined.

Kinow exports from Pakistan, for the last many years has been done without any planning or control. There is not a single institution, which may exclusively look after Kinow trade, or by-and-large, for Pakistan horticulture.

9.6. Post-Harvest Technology

The establishment of shipment standards over the world has contributed to increasing the level of and uniformity of fruit quality. The standards relate to quality, size, packaging method, and indication of contents. See *Appendix--- EC Marketing Standards for Citrus Fruits* for European Union Marketing Standards for citrus fruits, with relevance to Kinow.

9.6.1. Pre-cooling

Pre-cooling means cooling for horticultural products before shipment. The procedure is necessary to maintain the freshness of the fruits. There are several kinds of cooling methods; room cooling, forced-air cooling (pressure cooling), hydro cooling, package-icing, vacuum cooling and transit cooling (mechanical-refrigeration-top-icing and channel icing). For these methods to be effective, cold-storage rooms are needed to hold the commodity after cooling.

Consumers seek fruits, which have a good appearance, are delicious, have high nutrient content and are convenient and should be as fresh as possible: the fresher the better. The following details some post-harvest technologies, which seek to maintain freshness.

9.7. Standardized Cold Storage

Standardized cold storage includes:

9.7.1. Controlled Atmosphere Storage

Water loss results in wilting and increased activity of decay-causing organisms. The relevant humidity for Kinow is in the range of 85-90% at temperature of about 32-48⁰F (see Appendix -III for general product information). Atmosphere can be used to prolong the storage life of fresh products. The preferred atmosphere has lower oxygen but higher carbon dioxide concentration than normal air. These conditions can be achieved with Controlled Atmosphere

Storage (CA Storage). CA Storage has a beneficial effect on the measurable criteria of quality, chlorophyll content, and fresh weight and trim loss.

9.7.2. *Modified Atmosphere Storage*

The term MA Storage is used for a storage method influenced by CA condition. It involves using plastic film as the packaging material. The plastic films include LDPE, biaxially oriented polypropylene, polyvinyl alcohol, polyvinyl chloride, polyvinylidene chloride. These films have characteristics such as excellent transparency, protection from dew condensation, protection from collected moisture, heat-sealing capability and improvement of marketability.

The oxygen and carbon dioxide concentrations in the plastic film packages are determined by the following factors:

- Respiration rate of the commodity which in turn is influenced by type, weight and environmental temperature.
- Gas permeability of film, which is influenced by the type of material and its thickness.
- Ratio of the commodity weight to surface area of the package.

9.7.3. *Hypobaric Storage*

Hypobaric, or low-pressure, storage is a method to store horticultural products under sub-atmospheric pressure. Burg (1983)¹¹, the inventor, outlined the technology as a vacuum tank to store the commodity, a vacuum pump, a pressure regulator to leak air into the tank, a humidifier to inject cool stream and a refrigerator.

The method has the following advantages:

- exact control of O₂ concentration
- removal of ethylene and other volatile
- Compatible storage of ethylene-producing and ethylene-sensitive horticultural crops.

¹¹ Burg, S.P. (1983) "Metabolism, heat transfer and water loss under hypobaric conditions", in M. Lieberman ed., *Post harvest physiology and Crop Preservation*, Plenum Press, New York, 399-424

However, the system said to have the disadvantages of high cost facilities than CA & MA Stores, difficulty in humidification, and the production of off-flavor or odd ripening of some fruits.

10. Chapter: Short Term Potential Markets for Pakistani Kinow

Potential short term markets for Pakistan's Kinow includes:

Potential Markets	Exiting Market Value (\$000)	Market Growth (%) Compounded (1993-1997)	Pakistan		
			Existing Export Value (\$ 000)	Existing Market Share (%)	Compounded Export Growth (1993-97) (%)
Indonesia	18,693	42	4,773	25.53	71
Singapore	16,940	-0.31	717	4.23	17
Hong Kong	28,773	5	684	2.38	11
Saudi Arabia	16,393	3	665	4.06	33
UK	201,548	13	178	0.09	18
Malaysia	14,250	7	111	0.78	62

Source: ITC 1996 & 1997

Above countries have been identified as short-term potential markets on the basis of following:

1. Compounded market growth rates of above countries from 1993-1997" are positive. This suggests that the markets are expanding and there is room for Kinow exports every year.
2. Although Pakistan's share in the UK export of Kinow is very low but the said market posse challenges as the UK market growth rate (compounded) is highly favorable and increasing at 13% every year. The market size of UK at US \$201 million is far greater than of Pakistan's total Kinow exports of US \$14 million to the rest of world.
3. Pakistani Kinow has already been introduced into these markets and less selling and marketing efforts would be required (in short-term) as compared to other less or totally unexplored markets.
4. Pakistan's compounded growth rate into the above-mentioned countries (markets) is positive and illustrates satisfactory past export performance. For example: Pakistan citrus exports into Indonesia and Malaysia markets represents 71% and 62% of compounded growth from 1993-1997 respectively.

10.1. Time Windows

Time windows are defined as those market gaps through which potential markets are most likely to be penetrated with greater assurance to fill-up the gaps. Many successful exporters have started from a "window" or supplying a specific marketing need. This has led to longer term market presence.

Windows are based on:

- price differential between usual supplies
- variety preference
- seasonal differences, due to either out of season or especially early to the regular season
- Timeliness which is essentially opportunistic due to the failure of traditional suppliers. The key is the very short lived nature of the opportunity
- Ethnicity. When people move internationally, they take their eating habits with them. This presents an opportunity for the emigrant's country to supply the traditional product. In time host country citizens try the product.

Pakistan Kinow exports should concentrate for those supply gaps in above-mentioned market(s) for a given point in time from where it can capture the maximum market share in terms of volume and value. The time window identified for UK Italy, and France, are provided in *Appendix --- Supply Time Windows*.

It may be noticed that imports of Spanish mandarin into the UK during the months of April May June & July decrease allowing an opportunity for other exporters. Pakistan's mandarin season last from mid of December to mid April. Although at present this does not leaves Pakistan with favorable time to fill-up the above market gap but does provide us with an opportunity to exploit and develop late or early varieties of mandarin and or else increase the shelf-life of existing produce.

10.2. UK Market - European Scenario

As a member of the European Union, the United Kingdom's agricultural and food industries are subject to the workings of the Common Agricultural Policy. Exports of many UK

agricultural products are therefore heavily influenced by the availability of export subsidies (refunds) in operation.

10.2.1. UK Distribution Channel - Retail Food Sector

The major multiple "chain" supermarkets dominate the grocery market, accounting for 75 percent of all retail grocery sales.

Most of the multiples prefer to let importers and distributors handle the detail and specialist nature of international importing. The product is delivered to the retailer's central distribution points. Some retailers, who deal in large volumes of produce, occasionally import direct. In these cases, the retailer has a buyer or produce technician who places the order. Many importers of non-frozen and chilled fruits and vegetables have in-house distribution networks and warehousing facilities, while smaller importers contract out. Many fresh produce importers have controlled atmosphere-warehousing facilities and even pack houses catering to the growing retail demand for prepackaged, and sometimes trimmed, fruits and vegetables. Almost all importers of frozen and chilled foods contract out to specialized storage, handling, and distribution companies.

Marketing costs from FOB level to retail may include some or all of the following: -

- Sea/Air freight costs- Insurance costs
- Import duty (if applicable)
- Commission or margin to the importer (7-10% of wholesale price)
- Customs entry and clearance- Handling charge to importer (can be a small charge deducted from wholesale price).
- Transport to pack house and on to depot- Packaging and labeling
- Overheads, wastage and shrinkage allowance
- Mark-up by supermarket retailer (30-70%)

Structure of UK retail food trade can be seen in *Appendix--- Structure Of The United Kingdom's Retail Food Trade - 1995*

10.2.2. Product Promotions in UK

Competitor country marketing activities in the U.K. comprise trade exhibitions with national pavilions, trade and consumer literature, in-store promotions, point of sale materials, trade press advertising, and food trade directories.

The advertising expenditure on TV, radio and press media by the Marketing Boards of different countries in UK, spent on Fruits can be seen in *Appendix---Advertising expenditure in UK*

10.2.3. UK Central Wholesale Market

The main function of the wholesale markets is to break bulk, distribute produce to secondary wholesale operations and to supply regional independent grocers and catering outlets. The total wholesale sector in 1994 produced a turnover of \$21.0 billion, up from \$19.8 billion in the previous year.

The major London fruits markets are based at Covent Garden, Spitalfields. In addition, most major cities have smaller wholesale markets, which are serviced by the major importer/distribution companies or the London markets.

The role of the central wholesale market has been reduced to supplying independent retailers and caterers. Increasingly, wholesalers handling specialty produce supply primarily to the catering trade. As much as 80 percent of customers are thought to be from this sector. The whole sale sector is characterized by a strong "day-to-day" nature of the trading activity, being a price dominant market.

10.3. Malaysian Market - Far Eastern Scenario

Malaysia is located in Southeast Asia, sharing common borders with Thailand, Singapore, Indonesia, Brunei, and the Philippines. Increasing urbanization, rising incomes throughout that region has led to a change of lifestyle that is influencing consumer purchases. Brand image is becoming more important. Import duties on a wide variety of foods and beverages have been abolished or reduced over the past four years. Only Malaysia's agricultural imports in the region, during 1995, totaled more than \$4.1 billion.

The more affluent consumers in the region are attracted to branded products. Generally they will continue buying the same brand rather than switching to a new brand of the same quality and price. New suppliers wanting to get into the Far Eastern markets will have to introduce products that are of good quality, well packaged and competitively priced.

Store sales offering price discounts for a variety of consumer goods are popular in Malaysia, and these are generally carried out during off peak periods to attract shoppers to the stores. The peak periods are usually during festive holiday seasons such as Christmas, Chinese New Year, Ramadan (Muslim festival) and Deewali (Indian festival) when consumer spending increases. During these festivals food hampers are available on sale in all the supermarket stores.

10.3.1. Distribution

The Fruits and Vegetable distribution system in Malaysia consists primarily of private companies. There are numerous importers and commission agents who place order with foreign suppliers and distribute to supermarkets/grocery stores in the cities and to sundry shops in the rural areas. Several of the larger supermarket chains are also beginning to do more direct importing. The strength of the Malaysian economy and rapidly changing lifestyles has given rise to an expansion in the supermarket sector. Most of the larger supermarkets are modern, well designed outlets. These supermarkets offer good opportunities for promoting high-value products.

11. Chapter: Procedures for the export of Kinow

Topics discussed under this chapter are:

- Laws regarding export of Kinow and different modes of transactions.
- Rules & Regulations and steps involved in Kinow export.
- Over view of Government Agencies involved.
- Conclusion.

11.1. Laws regarding export of Kinow and different modes of transactions.

All exporters, other than organizations in public sector, when applying for export registration or renewal of existing export registration shall, among other things, produce a certificate of membership of any of the trade organization licensed or recognized by the Federal Government under the Trade Organization Ordinance, 1961 (XLV of 1961), to be an All Pakistan Association of Trade or Industry or both or it can be a Chamber of Commerce and Industry of the area in which head office of the exporter is located and which is affiliated to the Federation of Pakistan Chambers of Commerce and Industry.

Details of the above are mentioned in Export Policy Order (S.R.O. 782 (I)/98 dated 6th July 1998).

Citrus fruits (Kinow) is one of the commodities, that are subject to quality control under various rules made under:

Agricultural Produce (Grading and Marking) Act, 1937.

Malta Oranges Grading & Marking Rules, 1961.

Quarantine Act

11.1.1. Modes of transactions

Kinow is being exported through four modes of transactions, these are:

- (a) Advance
- (b) LC
- (c) DA
- (d) DP

Generally in Pakistan, export of Kinow is through advance. In this case buyer send payment of consignment in advance to the shipper's (exporter) bank. Bank on receiving payment certifies E-form against the amount received and on that base export is conducted.

In general, most of the exports in the world like that of Spanish and Morocco mandarins are being done against Letter of Credit (LC). The LC is a legal document, which is assumed and recognized, in the trading community as a secure payment mode against shipment of goods. This document is issued by the Buyer's Bank against some mutually agreed guarantee of payment in favor of Shipper.

Document against Acceptance (DA), which is commonly known as Delivery against Documents among the exporter community. Under DA, the shipper's Bank sends documents to the buyer's designated Bank and the delivery is made/released upon receipt of these documents. But unlike LC, Banks do not take any responsibility or give surety of payment(s) against any export consignments/shipments made under DA. Banks, in case of DA, simply act as third party for handing over of export documents and channel for transaction of payment, but without guaranteed payment surety from buyer or buyer's designated Bank. It was observed that exporter often become victim of late payments and in many cases face refusal of payment from the buyer under DA shipments, due to this most of Pakistani fruits and vegetable exporters fall on the mercy of buyers.

At present exporters are also using 'DP' as the mode of transaction. In this case buyers bank releases payment to the exporter's bank at the time documents are presented to the buyer.

11.2. Rules & Regulations and steps involved in Export

Exporter of Kinow has to pass through following steps in order to take commodity to the international market.

Step-1

E - form is issued by the bank to the exporter against "Advance remittance" or "DP" or "DA" or "LC".

Step-2

Exporters type commodity particulars (fruit weight/ value/export destination) in E-form and get it certified against the advance remittance balance (PRP ' Pay received certificate or

Encashment certificate), or Order certificate in the bank. Bank allots a specific serial number to E-form.

Step-3

Eight copies of invoice, original and four duplicate copies of certified E- form and filled shipping bill (mentioning E.form number, custom duty, weight, freight, invoice, FOB value etc) are taken to custom authorities for registration and a serial number is allotted by the said authority.

Step-4

Documents are now taken to appraisal department for valuation. Here Appraisal officer and Principle Appraisal do valuation of commodity (Kinow). Generally they take the prevailing wholesale market (Sabzi-Mandi) price of Kinow as standard for minimum price to avoid under invoicing.

Step-5

Export duties challan forms are deposited in bank and are checked by export office. Original E-form is detained by customs and the commodity is allowed for examination. Examination includes quarantine & grading checks.

Step-6

Ministry of food and agriculture issues quarantine and grading certificate. These certificates are issued by agriculture and livestock products marking and grading department and the issuing authority is agriculture and livestock marketing advisor, government of Pakistan.

Step-7

After quarantine and grading checks fruit is loaded in reefer containers and is moved to KPT (Karachi Port Trust), where after the payment of wharfage, the container is allowed to enter the port, for onward loading on the vessel.

Step-8

At port container is registered and a serial number is allotted to it. After registration examination of documents (weight/value/quarantine/grading/invoice etc) are conducted by examination officer, appraiser officer (A.O) and principal appraiser.

Step-9

Principle officer after his satisfaction allows shipment.

Step-10

On receiving shipment orders senior preventive officer (SPO) allows loading on the vessel.

11.3. Overview view of major government Agencies involved & Charges payable

Major Government agencies that are involved in the export of Kinow are:

(1) Customs

Customs authority process documents and makes physical checking of the consignment in order to ensure the legal requirements and safe transit.

- (a) Customs appraisal department gives certificate of value for the commodity.
- (b) Customs drug cell, issues clearance that the consignment is free from any drug.
- (c) Customs export department is responsible for the duties levied on export.

(2) Agriculture and livestock marketing advisor

The authority comes under Agriculture and livestock product marketing and grading department, which is a part of ministry of food and agriculture. It issues:

- (a) Quarantine certificate i.e. Product is safe for human consumption
- (b) Grading certificate i.e. product is of standard size.

(3) Karachi port trust (KPT)

Karachi port trust authority is responsible for the handling of containers from the time it enters the gate of KPT till loading onto the vessel.

11.3.1. Charges payable on export

At present, exporters have to pay various dues as per the existing export regulations. These dues and terminal charges include number of forms to be filled-up and paid at different stages and at different office at the port of shipment. Many of those dues, fees and charges are included in the following list:

- (a) C.E.D (per Container)
- (b) E.D.S (0.25% of the FOB Value)
- (c) Wharfage
- (d) Grading Fee
- (e) Shipment Charges
- (f) Agency Charges
- (g) Express courier for documents

11.4. Conclusion

Analysis of the export procedures and general working of various departments involved in export shows that it is a very long process and accompanies a number of weaknesses, summarized as follows:

- (a) Grading and marking act 1937 is obsolete and does not comply with the current international standards and requirements. At that time there was no concept of Kinow processing, therefore the law does not cover the requirements of processed fruit and is unable to differentiate it from fresh.

- (b) Appraisal officers' (A.O) of custom have no standards to evaluate fruits and vegetables. For example to give value to Kinow, A.O take the value of fresh Kinow available in the whole sale market (Sabzi-Mandi) as standard and that too varies on daily basis. This system is extremely crude and fresh Kinow available in Sabzi-Mandi can never be taken as standard in comparison to the processed product. At the same time A.O generally have a very limited knowledge of fruits and vegetables and the two drawbacks (no standard for pricing & lack of knowledge of F&V) make system very weak and can be used for malpractice.

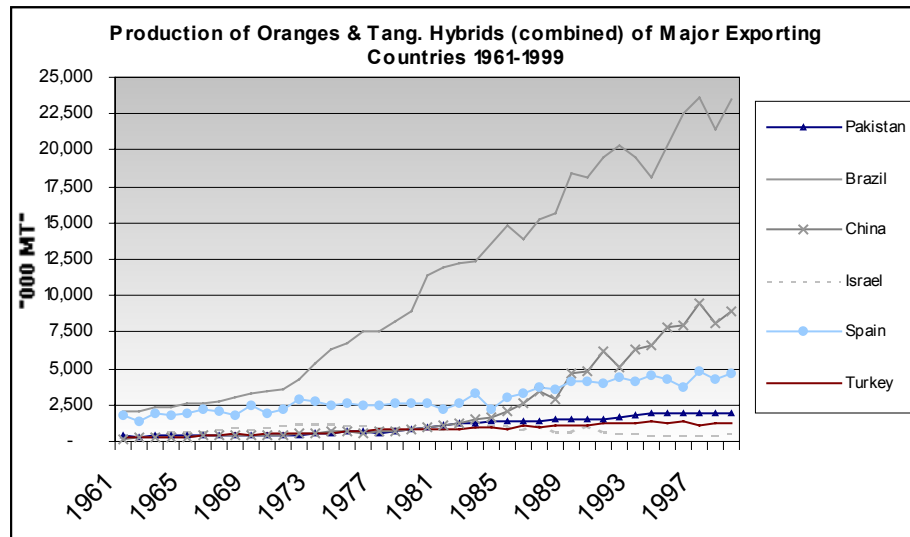
- (c) Quarantine and grading department better be at one place and should be available round the clock. But in case of Kinow the situation is almost opposite, the two departments are at two different places, at a distance from port and are available for eight hours only. This lack of availability some times results in delay of shipment and an opportunity loss for the exporter.

- (d) Processing of documents by customs department and warfage facility is available just for eight hour, like that of quarantine and grading department. That causes in convenience to the exporter.

- (e) One window operation is just present on papers and is not seen practically on port. Exporters or their agents have to walk from place to place to get their documents cleared and to move their consignment forward.

12. Chapter: Interventions

The entire players in the value chain from Kinow farm to export had made efforts, in their own capacity, to exploit the demand for Pakistan Kinow around the world and strive, though poorly, to organize exports of Kinow. Pakistan fruit exporter must be appreciated though, for putting in personal efforts in order to compete in the international markets and to export Pakistan Kinow in the absence of having received proper institutional support.



Source: FAO 1999

Figure 17: Oranges & Tang. Production of Major exporting Countries

Figure 17 shows that Brazil has maintained its production of mandarin and oranges, and achieved positive compounded production growth rate of 6 percent from the year 1961 - 1999. Brazil's production over the period from 1961 to 1999 has set a remarkable growth of 1,075 percent as compare to Pakistan's growth of 469 percent over the same period. Pakistan is still at the bottom line and remaining there, though around with other countries at the same level, is not appreciable in a broader perspective. China shows a leapfrog jump and takes off from the years 1977 onwards with 10 percent compounded growth rate however; this growth was achieved merely due to expansion of cultivated area instead of relative growth in yield.

Above scenario suggests that Pakistan Kinow and orange production maintains a steady but flat growth rate during the period stretched over 39 years due to somewhat personal efforts of few progressive farmers. A brief review of Pakistan Kinow production growth is already given in the chapter "Cultivation of Kinow".

Pakistan is at present exporting Kinow to regional and European countries. This fruit from Pakistan, by and large, catered for the culinary tastes of expatriates from the sub-continent settled overseas. However, it is evident that little efforts were made to introduce Kinow, on the part of exporters, government and private institutions, to the other segments of the markets apart from expatriates. One example can be found that, with the exception of one or two instances, Pakistan Kinow has hardly made its way to any major retail chain stores or super stores in Europe and even in Far East. Those exporters who claim that they supply Kinow to upper end markets i.e., to chain stores and super stores in Far Eastern markets, are actually supplying to a single retailer for onward supplies to high street and corner shop type convenience grocery stores.

After having read the above, it may be pondered as to why didn't anybody has ever noticed or mentioned above explained scenarios of Pakistan Kinow and if it was already known to all than why did not anyone ever had fixed solutions to it? In-fact, the above-mentioned Kinow state of affairs has been narrated for years and all players linked in the value chain were aware of it, but unfortunately everyone was making efforts at their own ends instead of addressing issues collectively by means of coordination and mutual consensus. The result was that all came up or devised their own solutions, which were not at all compatible and could never produced mutual benefit for each player in the value chain. For example: one group of exporters from Lahore stressed to reinstate previously waved government subsidy on freight for fruits and vegetables, whereas other group of exporters from Karachi was not interested in such subsidies. One of the leading Kinow exporters was in the favor of putting ban on unprocessed Kinow exports from Pakistan whereas small exporters were against such restrictions.

Before that we converse the required intervention(s), it would be wise to briefly recapitulate the issues and constraints identified and pointed out by stakeholders.

12.1. Constraints of Growers

Following are the constraints of growers pointed out during SMEDA field survey:

- low density planting and low yields
- natural calamities like fog and un-seasonal high temperatures causing damages to the produce
- low price because of advance sales of orchards
- 25 - 40 percent pre and post harvest losses
- poor farm management
- little attention given to required agricultural practices, pruning, fertilization, irrigation, spraying etc.
- Small scale farms - lack of Investment & Technology
- Weak linkages with processors and exporters

12.2. Constraints of Processors

The constraints inherent at processing stage of value chain as follows:

- mostly low tech plants
- relaxed adherence to international standards of size and quality
- limited cold storage space: shorter time windows for marketing
- mandarin specific processing plant: high idle capacity

12.3. Constraints of Exporters

Following are the most important constraints of exporters hampering Pakistan Kinow trade:

- Low product quality
- Family based exporters without brand name: in most of the cases, both suppliers and buyers at each end are blood relatives. These are small size exporters with limited and little resources and tend to forgo profits from suppliers' end in order to compete with local suppliers and export poor quality product.

- Indiscriminate & ruthless competition among exporters based on compromised quality, prices etc.
- lack of export house and pack-house facilities
- non-availability of high quality packing
- limited and expensive refrigerated transport at national and international levels
- non-availability of credit for export financing
- no brand loyalty
- International advertising: inconsistent supplies coupled with multiple brands has made it impossible for a single exporter to bear costs of aggressive advertising campaigns in the international markets

12.4. Institutional Constraints

- market intelligence: gross weaknesses in documentation of local and export figures of volume and value
- inconsistent government policy: irregular or no government incentives on exports
- weak monitoring of product quality
- low and expensive availability of refer containers and shipping space
- lack of research and development support: seedless varieties

In order to address above issues, agriculture sector of SMEDA had identified Kinow as a potential sub sector of fruits. It has been actively engaged to improve production, quality and markets for Kinow. SMEDA has taken up the responsibility to develop value chains of Kinow. In-depth research is being conducted by Agriculture Sector of SMEDA. Sources are being contacted and arrangements are being made to introduce latest Pre & Post-Harvesting technologies in Pakistan. In this connection, Agriculture Sector of SMEDA has already started working on international joint ventures and foreign collaborations in order to develop cool chains, cold storage facilities, international marketing and to invite multinational companies to supply fruits and vegetables under their brand names. These efforts will ultimately lead to the development of strategic plans at national level. The proper training and infrastructure will be provided through productive investment and it is hoped that there will be a remarkable increase in Pakistan Kinow production and exports.

Agriculture Sector of SMEDA has also identified the need to create a pull for a better value added product for export by investing money and efforts in carefully thought-out marketing strategy. The result will be the farmers will respond positively and shall focus their energies on higher better quality varieties and exporters will be better equipped to exploit international markets in order to achieve higher value from having presence in the upper end of markets.

The indispensable interventions, identified by SMEDA, required to develop Kinow value chain are:

12.5. Required Interventions

Following interventions are required for promotion of Kinow exports:

12.5.1. Concerted Marketing Campaign

- Marketing of Kinow by small exporters, each of different qualities will not achieve the desired results in the long term unless a pull strategy is employed. Each fruit leaving Pakistan's shores needs to go under one umbrella brand. This strategy has been very successfully employed by number of countries. Kinow of Pakistan should be marketed under that universal umbrella brand name, similarly other fruits and vegetables could be marketed under the same brand.
- Branding of commodities, competing in terms of taste and variety instead of merely competing on volumes.
- The synergies achieved through umbrella branding will in the long-term far outweigh the costs.
- Development of Brand, which may be used for other fruits.
- A comprehensive market research must be carried out and it shall be decided as to which market segment should be targeted in the specific country - premium market, middle etc.
- Carry out advertising and promotion activities according to desired product positioning and market segmentation.

12.5.2. Formalization of the export sector

- The sector to be formalized through the operations of the export houses and vertical integration with multinational food chain marketing companies.

12.5.3. Development of Export Houses

- Facilitate the development of export houses for promoting the export of fruits and vegetables.
- SMEDA shall team up with other agencies and make focussed marketing campaigns in the international markets. The export development fund should be used for the purpose.
- The export house may define minimum standards for the product, processing, packaging and shipment.
- The export house shall make arrangements for the provision of standardized packaging by mean of upgrading and promoting local packaging industry. This can be achieved by introducing high tech machinery for the manufacturing of standardized internationally acceptable packaging. Foreign multinational companies would be contacted for the packaging technology transfer projects. These projects may also include manufacturing of international standard paper for packaging.

12.5.4. Setting up of a Cool Chain

- Most fruits and vegetables are perishable and have to be processed through a cool chain to preserve it and prolong its shelf life. Technological interventions in preservation and processing technologies are available in the market. Developing sectoral level strategies will facilitate in substantially bringing down the investment required in machinery.
- The infrastructure required for the cold storage, cool transport and processing is at the priority list for the development of the sector. The private sector shall be encouraged to invest in this area for exporting higher value added Kinow.

Cold storage facilities located at key locations, available to the growers, processors and ports is also included. In this regard foreign agencies were contacted. In result, due to the efforts of

SMEDA, an MOU has recently been signed up between Government of Pakistan and Spain for US\$ 30 million. Under this MOU the Spanish government will provide a long-term loan aid payable in 30 years at 1 percent and the half of the project amount will be equity based for state of the art cool chain machinery and equipment to be supplied by Spanish cold storage Refrigeration Company. Different locations over the Pakistan have been identified for airport cold stores, urban cold stores and wholesale marketing stores. The proposed cold stores / refrigeration plan for Pakistan, including refrigeration capacity for each cold store category can be seen in the following *Figure 18*. Summary of Refrigeration plan can be seen in the Appendix --- Refrigeration Plan for Pakistan.

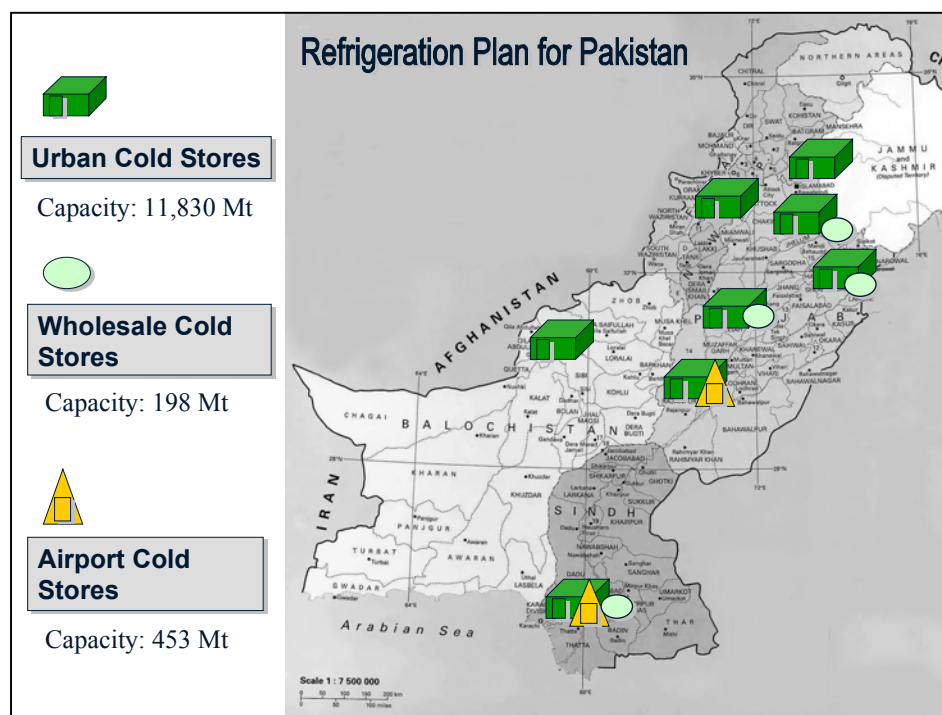
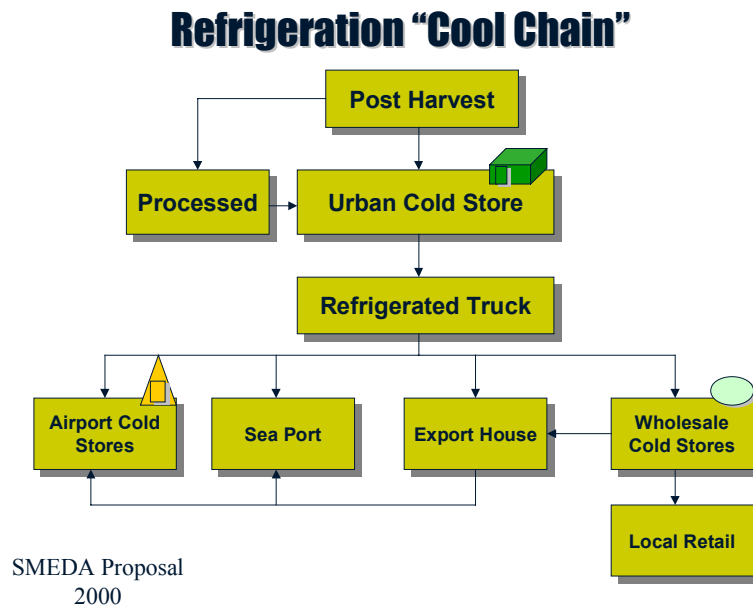


Figure 18: Refrigeration plan for Pakistan

Kinow exports will also benefit from above refrigeration plan, once the Spanish proposal of refrigeration for Pakistan fruits and vegetables is implemented and acted upon in its letter and spirit.

The proposed distribution cum marketing channel for Kinow exports is provided in the



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12.5.5. Formation of Horticulture Marketing Boards

- Establishment of Horticulture Marketing Board: The primary objective of forming a Horticulture Export Board is to promote, regulate, coordinate, control and improve the export of horticulture. The board will first take on the responsibility of export of Kinow and then its functions will be replicated to other fruits and vegetables after incorporating the empirical findings from the exports of Kinow.

12.5.5.1. Functions of the board as follows:

- Develop and implement the export marketing strategies
- Develop linkages between the stakeholders
- Arrange for Institutional support for the growers & farmers: technology, credit & know-how in order to produce better quality more exportable surplus. Encourage and facilitate the growers for producing demand driven varieties, for example; seedless varieties

- Set local and international supply channels for Kinow: direct all the exports through the common pooling system under cool chains and umbrella brand.
- Establish Export Houses and set standards
- Set rules and procedures for export activities and should carefully monitor their compliance with these standards, e.g., monitoring quality and packaging standards etc.
- Encourage fair marketing practices and strictly checking price-cutting.
- Control demands and supplies shift.
- Arrange financial assistance for all the links in the value chain.
- Represent the industry in the international forums.
- Carry out research and development to produce better high yielding varieties.
- Acquire Orders' from international buyers & ensure 'Order Fulfillment' as per customer provided and or universal quality standards.
- Recommend regulatory measures to GOP in order to achieve above-mentioned objective.

The specific functions shall continuously be evaluated for possible changes in order to keep them in line with the primary objectives and purpose of the Board.

12.5.5.2. Composition of the Board

- The Board will comprise of government representation and stakeholders from the private sectors to represent all the groups in the value chain. Experts will be hired from the private sector to successfully fulfil the objectives of the Board.
Board shall be a Guarantee limited Company in which the stakeholders will be allowed to buy out equity. The company will not be allowed to give out any dividends and all its income will be used to promote exports. The shares will be tradable in the stock exchange to increase the available sources of funds. It shall represent following:
 - Processors / Exporters (Members of Association)
 - Grower members (Members of Association)
 - Ex-officio government representatives e.g., CBR, Finance
 - Representation from Agriculture research institutes or centers e.g., Faisalabad Research Institute, PARC
 - Representtin from SMEDA & EPB

- Technical consultant members

The board will follow "single desk" approach whereby the Board acts as a regulator and monitors the activities while the private sector works in accordance with the rules and procedures being laid by the Board. The Board acts as the single desk and takes on the responsibility of the final outcome.

The structure of the Horticulture Board shall be as follows:

Chairman & CEO	2
EPB	1
SMEDA	1
Technical Consultant	1
Ex-officio	2
Agriculture Research	2
Growers	5
Processors	2
Exporters	2
Total	18

Organization structure of the board can be seen in the *Figure 19*.

Organization Structure of Horticulture Export Board

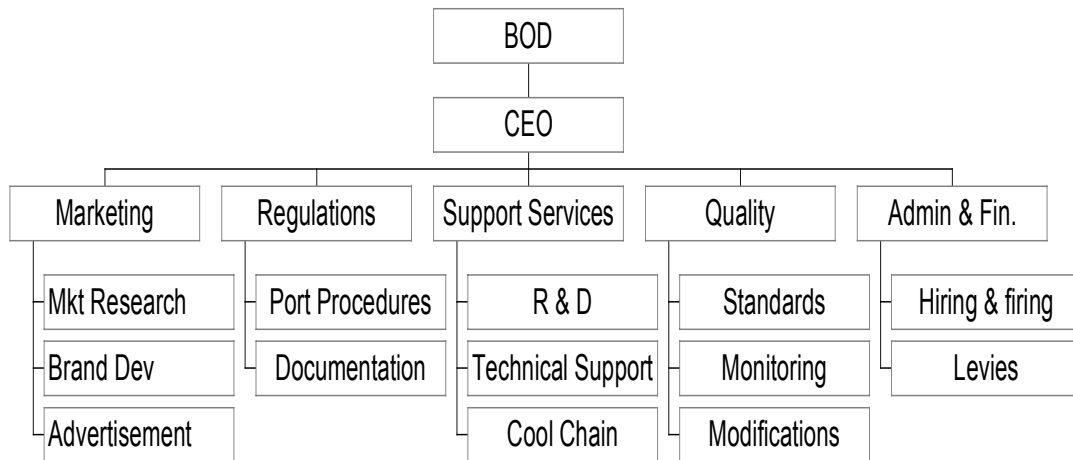


Figure 19 : Organization Structure of Horticulture Export Board

12.5.5.3. Financing of the Horticulture Board buy

Seed money will be obtained from the government to tangible assets and for the initial setup of the Board. The board than can be self-sustaining and raise its funds from the following:

- One time joining fee
- Export License fee
- Royalty for the use of umbrella brand name
- Fee for consultation services
- Grants/Aid from Donor Agencies

12.6. Immediate Interventions

1. Selective Progressive Farmers & Exporters should be identified and Special incentives should be given to them, keeping in consideration their ability to supply and maintain both Quantity/Quality.
2. Introduction of Brand Name. (Meeting international Standards)
3. Set standards for minimum sizes and quality controls of Citrus (Mandarin, Tang.) exports in accordance to the markets.
4. Rebate on required international Export Packaging.
5. Involvement of International Advertising Agencies (Expense to be shared by both Government & Private Entrepreneurs.(With a task to promote New & Existing potential markets)
6. Agreements with international Buyers according to which Quantity & Price should be pre-fixed.
7. Government investment on the basis of debt/equity in the Establishment of required Infrastructure including :

- a) Processing Plants
- b) International Standard Export Packaging.
- c) Packing Sheds near farms
- d) Storage Houses
- e) Transportation facilities (Factory to International markets)

13. Chapter: Kinow Production and Export Option Scenarios

The following section illustrates as to what alternative production and export options are available for Kinow. *Table 11* provides the market share projections for Kinow exports from Pakistan.

**Market Share Projections
Kinow (Mandarin) Exports from Pakistan**

World Market of Mandarin 1997		
	Value (Mill US \$)	(Quantity (000 MT)
World Market	1,613	2,453
Pakistan	14	89
Existing % Share	0.9%	3.6%
Projections		
Short Term (1-2 yrs)	44	88
% Share	2.7%	3.6%
Medium Term (3-5 yrs)	183	306
% Share	11.3%	12.5%
Long Term (5-7 yrs)	338	563
% Share	21.0%	23.0%

Table 11: Market Share Projections

It may be noticed that Pakistan's world mandarin and oranges market share during the year 1997 was 0.9 percent and 3.6 percent in terms of value and volume respectively. Although year 1997-98 and 1998-99 shows decline in market share of Pakistan Kinow both in terms of value and volume, we would still take year 1997 as a benchmark (see *Table 6 & Table 10*). The main reason in setting 1997 as a benchmark is because Pakistan had achieved its highest Kinow export volume in the year 1997 and it is assumed that Pakistan can at-least maintain the lost export volume in the shorter time period.

The projections provided in the *Table 11* are divided into short, medium and long-term. In the short-term period (1 to 2 years) Pakistan Kinow is targeted to achieve 2.7 percent and 3.6 percent of world mandarin market share respectively. It is believed that in the shorter run more emphasis shall be given to the quality controls in order to earn better \$ dollar value per metric tons of Kinow exports. However, on the longer run both value and volume level of 21 percent

and 23 percent up from the year 1997 of 0.9 percent and 3.6 percent must be achieved respectively.

13.1. Strategic Projections

The following *Table 12* represent the strategic projections. It can be observed that the exportable percentage target has been set at 25 percent of the total production. At present Pakistan's total citrus production is 2.1 million tons. During the year 1997, Pakistan exported 89,000 ton of Kinow, which is 17 percent of the targeted exportable percentage production.

Strategic Projections

Production (MT)	2,037,000	2,037,000	2,037,000	3,000,000
Exportable-25% Total	509,250	509,250	509,250	750,000
Export %	17%	17%	60%	75%
Export (MT)	88,580	88,580	305,550	562,500
Export Price \$/MT	159	500	600	600
Total Income (\$ mill)	14	44	183	338

1997 - Existing Scenario: Benchmark

2002 - Short Term: Improve Quality, Product Image & Documentation

2005 - Medium Term: Increase Volume and Improve Quality

2008 - Long Term: Increase Production, Volume & Quality

Table 12: Strategic Projections

The exportable target of 25 percent of the total production has been set very realistically in comparison to those of competitors (see *Table 13*). Spain has exported 64 percent of its total mandarin and orange farm production in the year 1997 at average value of US\$ 737/Mt, followed by Morocco and Turkey with 50 percent and 30 percent respectively, (see *Table 10* for average export values). Whereas, Pakistan could only export 4 percent of its total production during the year 1997, which further declined in the years 1998 and 1999.

Export Percentage of Total Mandarin Production

Country	Production Qty ("000" Mt)	Export Qty ("000" Mt)	% Produce Exported
Spain	1,992	1,281	64%
Moroco	400	198	50%
Turkey	366	110	30%
Pakistan	2,037	89	4%

Source: SITC 1997

Table 13: Export Percentage of Total Mandarin Production

There are three strategic levels provided in order to achieve above set targets mentioned under the strategic projections.

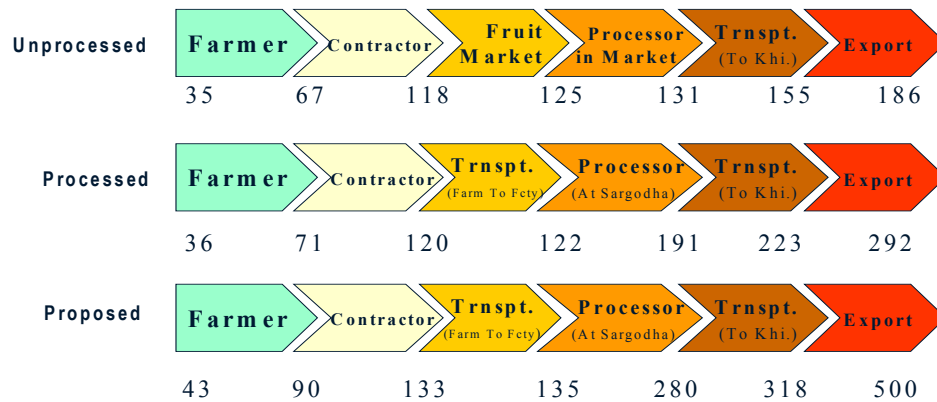
13.1.1. Level 1

Short-term: Improve Export Quality Only

Pakistan can achieve exports of US\$ 44 million without any increase in farm production level and with the same export volume level of the year 1997 (i.e., 17 percent of exportable target at US\$ 500/Mt). This can be achieved by means of concentrating more on the quality, product image and export procedures.

The set target of export value i.e., US\$ 500 per metric ton, is achievable during the year 1-2. It can be observed from the Kinow value chain presented in the *Figure 20* that under the unprocessed and processed exports (non-standardized set-up), the farmer costs are US\$ 35/Mt & \$36/Mt respectively. However, the costs to contractors under this set-up are US\$ 67 & US\$ 71/Mt for unprocessed and processed chain respectively. It can also be seen that costs to the exporter up-to Karachi are US\$ 155 and US\$ 223 under the same non-processed and processed set-up respectively. The average export price received by the exporters is US\$ 186/Mt and US\$ 292/Mt for unprocessed and processed (non-standardized set-up) exports respectively.

Kinnow Value Chains



Source: SMEDA field Survey 1999

Figure 20: Kinnow Value Chain

According to the above scenario, it can be established that the average price of Pakistan Kinow exports (US\$ 159/Mt) for the year 1997 could not be justified in comparison to the minimum cost incurred to exporters' up-till the point of receiving shipment in Karachi. The reason could be:

- That the average price is reported after adding up all categories of exports i.e., processed and non-processed divided over the whole export value. For example: the exporters may be getting higher export value for processed Kinow to Far East and low value for the exports without processing. However, the average prices per ton for processed and non-processed Kinow exports as per above is US\$ 239, which is still higher than that of US\$ 159/Mt what Pakistan achieved in 1997.
- That the processor and exporters are the same party and are willing to forgo profit margin at either of the processing or export end.
- That the exporters declare under-invoice pricing.

Therefore, keeping the 1997 level of Kinow export volume but at US\$ 500/Mt, Pakistan can achieve export value of US\$ 44 million up from US\$ 14 million in the short-term. The details of Level 1 can be seen in the *Appendix---Export Options*.

13.1.2. Level 2

13.1.2.1. Medium Term: Improve Export Quantity & Quality

In the medium term (3-5 years), both quality and quantity are improved. In medium term 60 percent of the targeted 25 percent exportable quantity is achieved at US\$ 600 per metric ton. It is learned from the exemplary case of Indonesian market discussed earlier that even at a point in time when the volume of export to Indonesia was growing the value per metric ton was dropping. This drop in value came about because Pakistani exporters kept on cutting prices at the expense of quality, which eventually resulted in huge drop of exports. It was concluded that lost export level could be achieved if exporters stop compromising with quality.

With 1-2 years of continuous Kinow exports conforming to the international quality standards, Pakistan in the medium term shall be able to achieve total export volume of 305,550 metric tons at US\$ 600/Mt amounting to total US\$ 183 millions.

If Pakistan had exported just 60 percent of the targeted exportable quantity (i.e., 25 percent of total production) during 1996 & 1997 respectively, earnings during the same period (1996 & 1997) would have been US\$ 180 million US\$ 183 million instead of \$ 6 and \$ 14 million respectively. Details of level 2 can be seen in *Appendix---Export Options*.

13.1.3. Level 3

13.1.3.1. Long Term: Improved Quality, Quantity and Increase Production

In the long term (5-7 years), the production level of Pakistan Kinow is also increased together with improved export quality and quantity. It is estimated that Pakistan Kinow production should increase to 3 million metric tons by the year 2007. In the long term, 75 percent (562,500 Mt) of the targeted 25 percent of the total production ought to be achieved. With 562,500 metric tons of Kinow export at US\$ 600/Mt, Pakistan shall attain total export value of **US\$338 million**.

The requisite financial interventions in order to achieve above strategic levels as follows:

13.1.4. Required Financial Intervention

The following scenario presents the immediate & medium term financial intervention required for developing and promoting exports of Pakistani Kinow.

13.1.4.1. Credit availability for the whole value chain

It is estimated that the credit availability for the entire Kinow value chain shall be as follows:

- Infrastructure Finance: **US\$ 40 million** (for the Kinow export)
- Running Finance: **US\$ 15 million** (credit line for the processors & packaging)
- Seasonal Credit: **US\$ 24 million** (for the orchard farmers & R&D). This credit line would be utilized for the investment in R&D for better quality and seedless varieties of Kinow and for farming inputs in order to discourage advance sales of orchard.

It is therefore, estimated that total of US Dollar 79 million is required in order to achieve above stated strategic targets for Kinow exports. The brief detail of above financial interventions is provided below:

Credit Availability for Kinow Value Chain (proposed - 2005)

To achieve Export Volume of 306,000 MT and Export Value of US\$183 Million

	SCH*	US\$ million
Infrastructure Finance		
Fixed Asset for Processing Facilities	N-I	8
Refer Containers	N-I	12
Marketing & Advertising	N-I	20
Total		40
Running Finance		
Kinow Stock Purchase	N-II	6.5
Cash at Bank (Working Capital Portion)	N-II	8.4

Total		15
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Seasonal Credit

For Orchard Farmers	P-I	19
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R&D	P-II	5
-----	------	---

Total		24
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Grand Total		79
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*Schedule (schedule can be seen in *Appendix---Proposed P & L of Kinow Processing plant*)

It must be noted that results of advertising and promotional activities, except sales promotions, may take a longer period (say 2-3 years) before that actual benefit is realized. However, having said so, it does not mean that advertising will not bring about any pull before 2-3 years but in-fact a gradual pull will start from the day one up-till the set targeted time period provided the activities of promotion are not cut short or closed down at all. Therefore, it is suggested that efforts in advertising & marketing shall continue and for this purpose the budget of US\$ 4 million per year has been proposed.

Orchard farmers shall be provided with credit facilities in order to produce better quality Kinow. The details of farmer cost are provided in *Appendix---Kinow Farmer Costs Comparison*. It can be noticed that at present under non-standardized set up, farmer, on average, are producing 1.5 Metric tons of exportable quality Kinow per acre of land out of total average production of 6 metric tons per acre. Under the proposed set up, it is envisaged that 2.5 metric tons of exportable quality Kinow can be achieved with very little additional cost i.e., Rs.2, 000/acre. The price structure of different qualities of Kinow at farm gate level can be seen in (*Appendix--- Kinow Contractor's Cost Break-UP Kinow contractors break up*).

It is assumed that in order to achieve export target volume of 306,000 metric tons in the medium term, 382,500 metric tons of Kinow per acre would have to be processed at 20 percent wastage margin. Therefore, 159,375 acres of land shall be required to produce at least 2.5 metric tons of exportable quality Kinow. In order to achieve said tonnage per acre, expenditure of US\$ 115 per acre (including additional cost for premium quality) will be

required. Therefore, credit line of US\$ 18.3 million for a total of 159,375 acres of land has been proposed, details can be seen at SCH P-I (orchard farmer credit) in *Appendix---Proposed P & L of Kinow Processing plant*.

Kinow purchase for processing evolves considerable amount of capital. For example, in order to achieve the above set export target, a single processing unit would purchase 10,124 metric tons of Kinow during the whole season, which amounts to US\$ 1.2 million, see SCH C-III (Kinow purchase) in *Appendix---Proposed P & L of Kinow Processing plant*. As per the industry norms, purchase of Kinow for processing is mostly done on credit (the longer the credit period higher the price of Kinow). However, it was observed that those exporters, which process Kinow themselves, purchase Kinow from either farmers¹², contractors / Arthi or Middleman at 15 days credit. The purchase of Kinow for 15 day's amounts to US\$ 168,344, therefore, a credit line of **US\$ 6.4 million** for 38 processing units has been proposed, see SCH F-III (financial cost) in *Appendix---Proposed P & L of Kinow Processing plant*.

The total credit line required, in order to achieve target export volume in the medium term amounts to **US\$ 78 million**.

The sales return achieved in the year 2005 is **US\$ 184 million**, see *Appendix--- Financials* for financial details¹³.

The brief investment and return figures as follows:

¹² Generally farms are put up for auction. 25 percent of the auction price is paid in advance and thereafter 3 to 4 installment rests over the period up-till last picking. Few exporters purchase farm at auction whereas, arthi and contractor are the main buyers of farm produce through auction, which further supplies produce to exporter and processors at usually 15 days credit terms.

¹³ The construction of detailed financial analyses for the years up-till 2005 is in progress.

13.1.5. Investment and Returns

Sr. #	Items	Unit	Cost (\$)	Amount (mil \$)
(a)	Infrastructure			
	Processing Plants	38 Nos.	76,538	3
	Cold Storage (Exc. Land) (cap:750 MT) ¹⁴	38 Nos.	90,870	3.5
	Land & Building	38 Nos.	43,888	1.7
	Reefer Container	400	30,000	12
	Advertising & Marketing (5 years)	5	4,000,000	20
(b)	Running Finance			
	Kinow Purchase (credit for a processing Unit)	38 Nos.	168,344	6.4
	Cash at Bank (working capital)	38 Nos.	217,316	8.3
(c)	Seasonal Credit			
	Orchard Farm credit (acres)	159,375	115	18.3
	R&D (5 years budget)		1,000,000	5
	Net Investment			78
	Expected Volume of Exports	306,000		
	Expected Export Sales Revenue		600	184

The total profit of US\$ 1.42 million, available for appropriation and tax, is realized by a single processing cum export unit under the proposed set-up. Therefore the total profit available for appropriation and tax for 38 model units would be **US\$ 54 million** (see *Appendix---Proposed P & L of Kinow Processing plant*).

It can be observed that with investment of US\$ 78 million, Kinow export sales revenue will be US\$ 184 million and the total earning would be US\$ 54 million, compared to that of total Kinow sales revenue of US\$ 14 million in the year 1997.

¹⁴ The amount provided against cold stoppage facilities may be excluded provided that the Spanish refrigeration proposal is approved & implemented for Pakistan fruits and vegetables.

14. Chapter: Appendices

14.1. Appendix--- *Kinow grower Costs*

Kinow Production	Per Acre
Yield (MT) (SMEDA Survey)	6
Tree Age (Years)	40
Peak Productive Period (Yr.)	20
Cost of Farming/Acre	RS
Fertilizer (1 Bag TSP, 5 Bags Ammonium Nitrate)	1,715
Pesticides	1,000
Cultivation (8 Ploughing @ 120/Plough)	960
Irrigation (with Tubewel 6-7 times)	300
Land Revenue	500
Labor @Rs2000/man/month	1,600
Income Tax	500
Opportunities Cost (Land Rent/Lease)	4,000
Additional expense (first 5 non-productive years)	685
Total	11,260
Farmer Margin	
Cost/Ton (@ 6 tons per acre yield)	1,877
Cost/Kg	1.88
Cost/Ton in US Dollars (\$)	35
Farm Auction Price per Acre (Rs.)	22,000
Farm Gate Value after Auction \$/Mt	69
Farmer Margin \$/Ton	34

14.2. Appendix--- Processing Cost Break-Up

Total Kinow Processed	Mt	10,125
Net Purchase Cost per MT of Exportable Kinow	\$	140
Variable Cost of Exportable Kinow per MT	\$	178
Fixed Cost per MT	\$	4
Processing Cost per MT of Exportable Kinow	\$	9
Packaging Cost per MT	\$	32
Total Cost per MT	\$	182
Average Sale Price per MT(SMEDA Survey)	\$	187
Profit Margin per MT	\$	5
Unit Contribution Margin per MT	\$	9
Break Even Volume	Mt	3,502

14.3. Appendix---*Kinow Farm Management*

Suggestions for scientific farm management are listed below.

a) Planting

For healthy plants and more yields, proper distance between the plants should be maintained. Recommended distance is 15 x 22 or 11 x 22 feet.

b) Fertilizer Application

Fertilizers should be given after the chemical analysis of soil, Plant age, health and fruit maturity stage. Suggested fertilization follows:

'Desi fertilizer'

(Manure--- November to January)

2) Green fertilizer includes:

a) 'Dancha' or 'Junter'

(15-20kg seed /acre is sown in March, ploughed in June and is buried there)

b) 'Guar'

(10-15 kg seeds /acre is sown in May ploughed in July and is buried there)

Both 'Desi' & 'Green' fertilizer is a good and natural source of nitrogen for the plants.

3) Chemical fertilizer

(a) Chemical fertilizers includes:

(b) Ammonium nitrate.

(c) Nitro- Phosphate

(d) Triple super phosphate.

(e) Potassium sulfate.

The requirements of chemical fertilizers for mature plants as follows:

(a) 1 kg – Nitrogen / annum

(b) 0.5 kg- phosphorous / annum

(c) 0.5 kg-potash / annum

In February half of the recommended quantity of Nitrogen and full quantity of Phosphorous & Potash should be applied to every plant in a circle, while maintaining a distance of 1.5 feet

from the stem, that is followed by irrigation. Left over half quantity of nitrogen should be applied in two installments, one in the month of may (after fruiting) and second between the month of July and September.

Fertilization for 100 plants per acre of Kinow plantation follows

Age of plant (years)	Desi fertilizer (Kg PER PLANT)	Ammonium nitrate (bags)	Triple super phosphate (bags)	Potash.Sulphate (bags)
2-3 years	10-15	2	---	---
4-5 years	20-30	3-4	1	0.5
6-9 years	35-50	5-7	1.5-2	1-1.5
10 & above	60-80	8	2.5	2

c) Irrigation

Land should be irrigated in the presence of six inches high 'Bund' (embankment) circling at a distance of 2 feet from every tree plant stem. 'Bund' is created in order to avoid direct contact of water with stem that may cause disease and weakness of stem.

From April to June----- irrigate after every 15-20 days.

Irrigation should be stopped at the time of flowering during the month of March.

d) Plant diseases

Insects that attack Kinow plants and fruit includes:

'Teela', 'Patta-lapait-sundi', 'white fly' and 'fruit fly'. Other problems are dryness of branches and Roots weakness.

To control the attack of insects three sprays are recommended per year.

1st-----Before flowering (February)

2nd-----After fruit formation (April)

3rd-----After rains (September)

e) Pruning

Proper pruning gives shape and better fruit to plants and also protects it against insects and diseases.

After harvesting of fruit remove dry branches (Dry & 2 inches of green portions of the dry branches are removed). Apply some fungicide on slashed area to give protection against fungus attacks.

14.4. Appendix--- *List of FCKJ & Fresh Kinow Processing Plants*

(a) Details of imported plants are as follows:

- 1) Sarah Fruit Trading Company (Karachi) (Spanish make- 10 Tons/ Hour Capacity)
- 2) Roshan Enterprises (Bhalwal Sargodha) (Spanish make- 10 Tons/ Hour Capacity)
- 3) Al-Mehmood Establishment (Bhalwal Sargodha) (Italian make- 5 Tons/ Hour Capacity)

(b) Details of some Locally Manufactured Plants

- 1) Ali International (Karachi)
- 2) Arif Overseas Traders (Karachi)
- 3) Aroma Enterprises (Karachi)
- 4) Chase International(Karachi)
- 5) Iftekhar Ahmad & Co(Karachi)
- 6) King Citrus Trade(Karachi)
- 7) Shazco Traders(Karachi)
- 8) Tri-Star Enterprises(Karachi)
- 9) Union Fruit Export(Karachi)
- 10) Al-Mehmood Establishment (Bhalwal, Sargodha)

The capacity of local plants is around 5-10 Tons/Hour

(c) Major Factories producing FCKJ

- (a) Sun-Flow Citrus located at Sargodha with a capacity of 650MT/ day.
- (b) Cargill Pvt. Ltd. located at Sargodha with a capacity of 450MT/day.
- (c) Fresh Juices Pvt. Ltd. located at 'Bhai-Pheero' with a capacity of 180 MT/day.

14.5. **Appendix--- EC Marketing Standards for Citrus Fruits**

DEFINITION OF PRODUCE

This standard applies to the following fruit, classified as 'citrus fruit'; to be supplied fresh to the consumer, citrus fruit for industrial processing being excluded:

- lemons: fruit of varieties (cultivars) derived from the species *Citrus limonia* (L.) Burm F.
- Mandarins, tangerines, satsumas, clementines, wilkings and other fruit of varieties (cultivars) derived from the species *Citrus reticulata* (Blanco) or hybrids of that species).
- Oranges: fruit of varieties (cultivars) derived from the species *Citrus sinensis* (Osbeck).

PROVISIONS CONCERNING QUALITY

It includes minimum quality requirements after preparation and packaging for 'Extra' Class, Class I, Class II

a) Minimum requirements

In all classes, subject to the special provisions for each class and the tolerances allowed, the citrus fruit must be:

- Intact.
- Sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded.
- Free from damage and/or external deterioration caused by frost.
- Clean, practically free of any visible foreign matter.
- Free of abnormal external moisture.
- Free from any foreign taste and/or smell (& sup1;).

The citrus fruit must have been carefully picked and have reached an appropriate degree of development and ripeness in accordance with criteria proper to the variety and to the district in which they are grown. The state of ripeness must be such as to allow the fruit:

- To withstand transport and handling.
- To arrive in satisfactory condition at the place of destination.

Furthermore, the degree of coloring shall be such that, following development, the citrus fruit reach their normal variety color (subject to special conditions applicable to each class) at their destination point, account being taken of the time of picking, the growing area and the duration of transport.

The citrus fruit must be free from signs of internal shriveling caused by frost and from bruising or extensive healed-over cuts.

This provision does not preclude a smell, which might be caused by a preserving agent used in accordance with Community provisions.

b) Minimum juice content and coloring

Minimum juice content in comparison with the total weight of the fruit - extraction by means of a hand press.

(i) ORANGES

- Thomson navels and Tarocco: 30%
- Washington navels: 33%
- Other varieties: 35%

Colouring must be typical of the variety; however, a tolerance of light green colour is allowed, provided it does not exceed one-fifth of the total surface of the fruit, account being taken of the time of picking and of the growing district.

(ii) WILKINGS, TANGERINES, OTHER MANDARINS AND THEIR HYBRIDS

- minimum juice content: 33%

Colouring must be normal for the variety type on at least two-thirds of the surface of the fruit.

c) Classification

Citrus fruit is classified into three classes defined below.

(i) 'Extra' Class

Citrus fruit in this class must be of superior quality. In shape, external appearance, development and colouring they must be typical of the variety. They must be free from defects, except slight superficial blemishes, which must not impair the quality, or the general appearance of the fruit, or the presentation of the package.

(ii) Class I

Citrus fruit in this class must be of good quality. They must display the characteristics typical of the variety or type, having regard to the time of packing and to the district in which they are grown.

The following defects, however, are allowed, provided they do not impair the general appearance or keeping qualities of fruit of a given consignment:

- Slight defect in shape.
- Slight defect in colouring.
- Slight skin defects inherent in the formation of fruit, such as silver scurf, russets, etc.
- Slight healed defects due to mechanical causes, such as rubbing, damage due to hail, knocks, etc.

(iii) Class II

This class includes Citrus fruit which as a whole, do not qualify for inclusion in the higher classes but satisfy the minimum requirements specified above.

Defects in shape, development and colour are allowed if they do not seriously harm the general appearance, or the keeping qualities of fruit of a given consignment;

- Defect in shape.
- Defect in colouring.
- Rough skin.
- Superficial healed skin alterations.
- Slight and partial detachment of the pericarp for oranges (detachment being normal for mandarins, clementines, satsumas, wilkings and tangerines).

PROVISIONS CONCERNING SIZING

a) Minimum size

Fruits of less than the following minimum dimensions are excluded:

- Oranges 53 mm
- Satsumas, tangerines, wilkings, other
mandarins and their hybrids 45mm
- clementines and monreals 35mm

b) Size scales

The scales of sizes are as follows:

Oranges

Size	Diameter in mm
1	87-100
2	84-96
3	81-92
4	77-88
5	73-84
6	70-80
7	67-76
8	64-73
9	62-70
10	60-68
11	58-66
12	56-63
13	53-60

Clementines and monreals, satsumas, tangerines, wilkings and other mandarins, and their hybrids

Size	Diameter in mm
1	63 and above
2	58-69
3	54-64
4	50-60

5	46-56
6	43-52
7	41-48
8	39-46
9	37-44
10	35-42

c) Uniformity in sizing

Uniform sizing is required as follows:

(1) For fruit arranged in regular layers, the difference between the smallest and the largest fruit in the same package must not exceed the following maximal:

- ORANGES

Sizes 0 to 2: 11 mm

Sizes 3 to 6: 9 mm

Sizes 7 to 13: 7 mm

-CLEMENTINES AND MONREALS, SATSUMAS, TANGERINES, WILKINGS, OTHER MANDARINS AND THEIR HYBRIDS

- Sizes 1 to 4: 9mm
- sizes 5 to 6 8mm
- sizes 7 to 10 7mm

(ii) For all fruit not arranged in layers, however presented, the difference between the smallest and the largest fruit in the same package must not exceed the range of the appropriate size grade in the size scale. For lemons, each producer Member State may apply, in respect of its own production and taking account of requirements on the market destination, the criteria for uniformity laid down for fruit arranged in regular layers.

(iii) For fruit in bulk in a transport vehicle or transport vehicle compartment:

- either all the fruit must comply with the minimum size requirements,
- Or the maximum size difference must not exceed the range obtained by grouping three consecutive sizes in the size scale.

PROVISIONS CONCERNING TOLERANCES

Tolerances in respect of quality and size shall be allowed, in each package of each bulk consignment, for citrus fruit not meeting the requirements for its class.

a) Quality tolerances

(i) 'Extra' Class

5% by number or weight of citrus fruit not satisfying the requirements for the class, but conforming to those of class I or, exceptionally, coming within the tolerances for that class, and not more than 5% by number or weight of fruit having lost their buttons.

(ii) Class I

10% by number or weight of citrus fruit not satisfying the requirements for the class, but conforming to those of class II or, exceptionally, coming within the tolerances for that class, and not more than 20% by number or weight of fruit having lost their buttons.

(iii) Class II

10% by number or weight of citrus fruit, not satisfying the requirements for the class. Not satisfying the minimum requirements, of which not more than 5% of fruit showing slight superficial unhealed and not moist cuts (excluding any trace of decay, showing pronounced or any other deterioration rendering it unfit for consumption). Or soft and shriveled fruit and not more than 35% by number or weight of fruit having lost their buttons.

b) Size tolerances

For all classes, however presented, a maximum tolerance of 10% by number or weight of citrus fruit corresponding to the size immediately below or above the size (or sizes, in the case of the combination of three sizes) mentioned on the package or the transport documents is allowed.

Where citrus fruit are in bulk in a transport vehicle or transport vehicle compartment, with no requirements other than the minimum size, the tolerance of 10% can apply only to fruit, the diameter of which is not smaller than the following minimal:

- lemons 43 mm for class II
- oranges: 50 mm
- satsumas, tangerines, wilkings, other mandarins, and their hybrids: 43mm

- clementines and monreals: 34 mm

PROVISIONS CONCERNING PRESENTATION

a) Uniformity

Each package or bulk consignment must contain citrus fruit of the same variety, quality, origin, size (where required), and practically the same degree of development and ripeness.

In addition, for the 'Extra' class, uniformity in colouring is required.

The visible part of the contents of each package or consignment must be representative of the entire contents.

b) Presentation

Citrus fruit must be presented as follows:

(a) Arranged in regular layers, in accordance with the size scales, in closed or open packages.

This presentation is compulsory for the 'Extra' class and optional for classes I & II;

(b) Not arranged in layers, in closed or open packages, in accordance with the size scales.

In bulk in a transport vehicle or transport vehicle compartment, with a maximum difference between fruit not exceeding the range obtained by grouping three consecutive sizes in the size scales.

These types of presentation are only allowed for classes I & II.

(c) In bulk in a transport vehicle or transport vehicle compartment, with no requirement other than that of minimum size.

This system of presentation is allowed only for class II.

(d) In individual packages for direct sale to the consumer of a weight less than 5 kg:

(i) When the individual packages are made up by number of fruit, the size scales are compulsory for all classes;

(ii) When the individual packages are made up by weight of fruit, the size scales are not compulsory, with a maximum difference between fruit not exceeding the range obtained by grouping three consecutive sizes in the size scales.

This type of presentation is only allowed for classes 'Extra', I and II.

If the fruit are wrapped, thin, dry new and odorless (1) paper must be used.

- The use of any substance tending to modify the natural characteristics of the citrus fruit, especially its taste or smell is prohibited.
- This provision does not preclude a smell, which might be caused by a preserving agent used in accordance with Community provisions.
- This provision shall not preclude the use of preserving agent in accordance with Community provisions.

c) Packaging

The citrus fruit must be packed in such a way as to ensure that they are suitably protected.

The materials used inside the package must be new, clean and of a quality such as to avoid causing any external or internal damage to the produce. The use of materials and particularly of paper or stamps bearing trade specifications is allowed provided that the printing or labeling has been done with a non-toxic ink or glue.

The package or bulk consignment must be free from any foreign matter; however, a presentation where a short, not woody, twig with some green leaves adheres to the fruit is allowed.

PROVISIONS CONCERNING MARKING

1. For citrus fruit presented in packages, each package must bear in letters grouped on the same side, the following particulars, legibly and indelibly marked and visible from the outside:

a) Identification

Packer and/or Dispatcher: Name and address or officially issued or accepted code mark. However, in the case where a code mark is used, the reference “packer and/or dispatcher (or equivalent abbreviations)” has to be indicated in close connection with the code mark.

b) Nature of Produce

Name of species if the produce is not visible from the outside; for clementines, mandarins, tangerines, satsumas and other small fruit, the name of the species is compulsory in any case;

Name of the variety in the case of oranges;

Name of the type:

- For lemons: possibly the indications 'verdelli' and 'primofiore'
- For clementines:
- Clementines, pipless
- Clementines (1 to 10 pips)
- Where applicable, monreal clementines or clementines with pips (more than 10 pips).

c) Origin of Produce

Country of origin and optionally district of origin or national, regional or local place name.

d) Commercial Specifications

(i) Class;

(ii) Size to be indicated, however the fruit are presented, in accordance with the size scale, the reference number on the scale to be shown and also the number of fruit if arranged in layers;

(iii) Where appropriate, mention that a preservative has been used in accordance with Community provisions;

(iv) De-greening: in the case where it appears that, because of the use of a 'de-greening' process, the percentages admitted for fruit having lost their button are exceeded or are likely to be exceeded, the term 'de-greening' or 'de-greened fruit' must be marked on the document accompanying the produce.

e) Official Control Mark (optional)

3. For citrus fruit transported in bulk (loaded directly into a vehicle or vehicle compartment) the above particulars must appear on a document accompanying the goods or on a notice placed in a visible position inside the transport vehicle. For consignments of fruit comprising three consecutive sizes, the upper and lower limiting reference numbers on the scale must indicate the size.

14.6. Appendix --- Supply Time Windows

UK Mandarins Imports 1997 by month Tons													
	January	February	March	April	May	June	July	August	September	October	November	December	Total
Spain	16,158	15,124	10,501	4,932	809	136	56	1	1,496	12,974	17,588	30,467	110,240
South Africa				386	3,499	5,844	5,315	1,368	238	11			16,660
Turkey	3,664	921	701								7,090	3,438	15,813
Morocco	2,670	1,301	1,841	1,562	22	23				83	2,101	2,052	11,654
Uruguay			18	1,139	2,098	2,280	1,280	1,888	1,317	309			10,330
Argentina				1,117	1,355	1,734	1,684	1,527	1,135	83			8,634
Israel	4,682	1,434	1,397	402	50							449	8,413
Cyprus	451	2,395	2,083	918								10	5,858
Netherlands	464	219	87	242	174	361	299	1,202	1,551	173	59	237	5,069
Zimbabwe				150	73		2,012						2,234
United States	35	323	1,433	219									2,011
France	264	600	358	54	23		2	129	3	200	57	307	1,994
Saudi Arabia							1,005						1,005
Jamaica	68	147	160	210	130	20	20						757
Belgium	169	287	59									20	534
Pakistan	24	71	163	135	42								435
Swaziland						4		332	52				388
Italy	134	113			3						47	53	350
Brazil						118	182		44				343
India		96	99	59	6								260
Chile							52	180					233
Egypt	18	81	61										160
Germany							72					19	91
Peru						32	32						65
Ireland	9	2	15										22
Trinidad				12	22								34
Mexico								24					24
Portugal												22	22
Syria	16												16
Sweden								3			7		10
Austria											6		6
TOTAL	28,826	23,114	18,976	11,537	8,306	10,552	12,011	6,654	5,836	13,833	26,955	37,096	203,691

Italy Mandarins Imports 1997 by month -- Tons													
	January	February	March	April	May	June	July	August	September	October	November	December	Total
Spain	1,269	6,658	7,774	5,226	1,190	446	71	41	288	9,138	10,397	5,414	47,907
France	215	641	427	181	66	7	1		160	1,699	709	459	4,564
Germany	87	123	334	204	121	6	5		6	136	195	254	1,468
Netherlands		1	3		1	1	7	43	383	125	7	9	578
Sweden			44										44
United Kingdom										41			41
Belgium										23		1	24
Greece					1							19	20
Poland	20												20
Slovenia	4	5											9
Denmark				2									2
Austria											1	1	2
TOTAL	1,595	7,428	8,582	5,613	1,379	460	84	84	837	11,162	11,309	6,157	54,679

France Mandarins Imports 1997 by month – Tons													
	January	February	March	April	May	June	July	August	September	October	November	December	Total
Spain	51,305	32,843	16,877	6,371	2,873	486	4,998	25	1,615	27,229	49,359	63,331	257,310
Morocco	15,658	8,389	4,815	411						694	8,497	12,069	50,531
Israel	1,817	946	603	202	33							238	3,839
Germany	954	688	214					1	135	190	243	614	3,038
Netherlands	224	28	101	37	42	298	130	188	697	37	50	21	1,846
Cyprus	84	532	626	255									1,498
Italy	143	390	65	61	187	34		4		7	113	145	1,148
Belgium	169	309	70	23	1	2	15	4	85	14	85	95	875
Turkey	176	655											831
United Kingd	5	23	32	529	2	1	2	1		1		2	595
Tunisia	2	196	392										590
South Africa						68	60	258	5				392
Uruguay						67	89	129	64	33			382
Egypt	20	156											176
Jamaica	20	20	20	13	9	19							103
Argentina					6	25		14					45
Poland												16	16
Switzerland			4							1	10		15
Dominican R	2	2	2							1	5		12
Cameroon		10											10
Swaziland							9						9
Portugal			2		1							1	4
TOTAL	70,579	45,187	23,823	7,902	3,154	1,000	5,303	624	2,601	28,207	58,362	76,532	323,265

Source: www.marketag.com sponsored by US Department of Agriculture 1999

14.7. Appendix--- Structure Of The United Kingdom's Retail Food Trade - 1995

	OUTLETS	SALES
	Nos.	(Mil. £)
MAJOR MULTIPLE SUPERMARKETS (UK-WIDE)		
J. Sainsbury (incl. 11 Savacentres)	366	12,627.0
Tesco	522	12,094.0
Argyll Group (incl. 372 Safeway, and 107 Presto)	479	6,069.4
ASDA (incl. 7 Dales Discounter)	203	5,285.3
Somerfield Holdings (incl. 230 Gateways, 324 Somerfield, 26 Food Giant, 35 Solo)	615	3,156.3
SUB-TOTAL	2,185	39,232.0
OTHER MAJOR MULTIPLE SUPERMARKETS		
William Morrison	73	2,099.4
Waitrose (John Lewis Partnership)	111	1,092.7
Jacksons 55 naBudgens Stores	102	283.0
Walter Wilson	57	na
SUB-TOTAL	398	3,475.1
CO-OPS		
Cooperative Wholesale Society	716	3,061.0
Cooperative Retail Services	455	1,270.8
United Norwest, Stoke	245	na
Central Midlands, Lichfield	104	na
Others	1,032	na
SUB-TOTAL	2,552	4,331.8
DISCOUNTERS		

Kwik-Save Group	972	3,200.0
Aldi	150	na
Netto	94	na
Lidl	40	na
Others	94	na
SUB-TOTAL	1,350	3,200.0

(1994 Figures) CONVENIENCE CHAINS

Europa Foods	50	60.5
SUB-TOTAL	50	60.5

(1994 Figures) WAREHOUSE CLUBS**

Price-Costco	5	na
SUB-TOTAL	5	na

GRAND TOTAL	6,540	50,299.4
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** newly emerged in the UK; Costco opened its first outlet 12/93

14.8. Appendix---Advertising expenditure in UK

The figures constitute only direct advertising (TV, radio and press) expenditures recorded in the UK fruit market (Media Expenditure Analysis Limited).

Country	Marketing Board	1994	1995
		Jan-Dec (US\$)	Jan-Dec (US\$)
France	Sopexa/French apples	1,244,700	946200
Netherlands	Dutch Central Bureau of Fruits & Vegetable	N/A	331,650
Spain	Food & Wine	383,550	N/A
New Zealand	New Zealand Apple & Pear Marketing Board	N/A	860,700
South Africa	Capespn - all Cape Fruits	255,900	N/A
	Cape Apples	387,900	280,650

Source: USDA data - reported by Trade Port 1999

14.9. Appendix--- *Standardization of Packaging*

Standardization of Packaging

Produce package standardization is interpreted differently by different groups. The wide variety of package sizes and material combinations is a result of the market responding to demands from many different segments of the produce industry. For example, many of the large-volume buyers of fresh produce are those most concerned with the environment. They demand less packaging and the use of more recyclable and biodegradable materials, yet would also like to have many different sizes of packages for convenience. packers want to limit the variety of packages they must carry in stock, yet they have driven the trend toward preprinted, individualized containers. Shippers and trucking companies want to standardize sizes so the packages may be better palletized and handled.

Produce buyers are not a homogeneous group. Buyers for grocery chains have different needs than buyers for food service. For grocery items normally sold in bulk, processors want largest size packages that they can handle efficiently - to minimize unpacking time and reduce the cost of handling or disposing of the used containers. Produce managers, on the other hand, want individualized, high quality graphics to entice retail buyers with in-store displays.

Selecting the right container for fresh produce is seldom a matter of personal choice for the packer. For each commodity, the market has unofficial, but nevertheless rigid standards for packaging; therefore it is very risky to use a nonstandard package. packaging technology, market acceptability, and disposal regulations are constantly changing. When choosing a package for fresh fruits and vegetables, packers must consult the market, and in some markets, law may require standard packages.

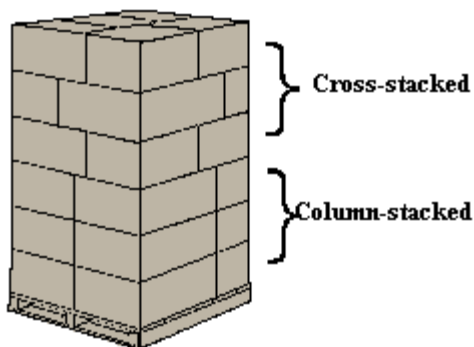
Corrugated fiberboard manufacturers print box certificates on the bottom of containers to certify certain strength characteristics and limitations. There are two types of certification. The first certifies the minimum combined weight of both the inner and outer facings and that the corrugated fiberboard material is of a minimum bursting strength. The second certifies minimum edge



crush test (ETC) strength. Edge crush strength is a much better predictor of stacking strength than is bursting strength. For this reason, users of corrugated fiberboard containers may insist on ECT certification to compare the stackability of various containers. Both certificates give a maximum size limit for the container (sum of length, width, and height) and the maximum gross weight of the contents.

Both cold temperatures and high humidity reduce the strength of fiberboard containers. Unless the container is specially treated, moisture absorbed from the surrounding air and the contents can reduce the strength of the container by as much as 75 percent. New anti-moisture coatings (both wax and plastic) are now available to substantially reduce the effects of moisture.

In many applications for corrugated fiberboard containers, the stacking strength of the container is a minor consideration. For example, canned goods carry the majority of their own weight when stacked. Fresh produce usually cannot carry much of the vertical load without some damage. Therefore, one of the primarily desired characteristics of corrugated fiberboard containers is stacking strength to protect the produce from crushing. Because of their geometry, most of the stacking strength of corrugated containers is carried by the corners. For this reason, hand holes and ventilation slots should never be positioned near the corners of produce containers and be limited to no more than 5 to 7 percent of the side area.

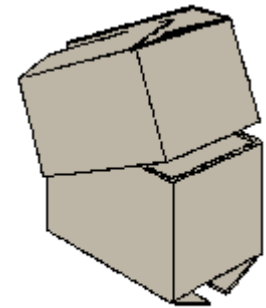


Interlocking the packages (cross stacking) is universally practiced to stabilize pallets. Cross stacking places the corner of one produce package at the middle of the one below it, thus reducing its stacking strength. To reduce the possibility of collapse, the first several layers of each pallet should be column stacked (one package directly above the

other). The upper layers of packages may be cross-stacked as usual with very little loss of pallet stability.

There are numerous styles of corrugated fiberboard containers. The two most used in the produce industry are the one piece, regular slotted container (RSC) and the two piece, full telescoping container (FTC). The RSC is most popular because it is simple and economical.

However, the RSC has relatively low stacking strength and therefore must be used with produce, such as potatoes, that can carry some of the stacking load. The FTC, actually one container inside another, is used when greater stacking strength and resistance to bulging is required.



A full-telescoping container

the

A third type of container is the Bliss box, which is — constructed from three separate pieces of corrugated fiberboard. The Bliss box was developed to be used when maximum stacking strength is required. The bottoms and tops of all three types of containers may be closed by glue, staples, or interlocking slots.

Almost all corrugated fiberboard containers are shipped to the packer flat and assembled at the packing house. To conserve space, assembly is usually performed just before use. Assembly may be by hand, machine, or a combination of both. Ease of assembly should be carefully investigated when considering a particular style of package.

In recent years, large double-wall or even triple-wall corrugated fiberboard containers have increasingly been used as one-way pallet bins to ship bulk produce to processors and retailers. Citrus, cabbage, melons, potatoes, and pumpkins, and have all been shipped successfully in these containers. The container cost per pound of produce is as little as one fourth of traditional size containers. Some bulk containers may be collapsed and re-used.

For many years, labels were printed on heavy paper and glued or stapled to the produce package. The high cost of materials and labor has all but eliminated this practice. The ability to print the brand, size, and grade information directly on the container is one of the greatest benefits of corrugated fiberboard containers. There are basically two methods used to print corrugated fiberboard containers:

Post Printed. When the liner is printed after the corrugated fiberboard has been formed, the process is known as post printing. Post printing is the most widely used printing method for corrugated fiberboard containers because it is economical and may be used for small press runs. However, post-printing produces graphics with less detail and is usually limited to one or two colors.

Preprinted. High quality, full-color graphics may be obtained by preprinting the linerboard before it is attached to the corrugated paperboard. Whereas the cost is about 15 percent more than standard two color containers, the eye-catching quality of the graphics makes it very useful for many situations. The visual quality of the package influences the perception of the product because the buyer's first impression is of the outside of the package. Produce managers especially like high quality graphics that they can use in super market floor displays.

Preprinted cartons are usually reserved for the introduction of new products or new brands. Market research has shown that exporters may benefit from sophisticated graphics. The increased cost usually does not justify use for mature products in a stable market, but this may change as the cost of these containers becomes more competitive.

14.10. Appendix --- Refrigeration Plan for Pakistan

Refrigeration Plan for Pakistan Perishable Foodstuffs

Proposed by Ramon Vizcaino international;S.A (Spain) - Revised

[Summary](#)

PROVINCES	Population per Province (000)	City	Population per City (000)	Size of Cold Storage Building (m)	Nos. & Size of Cold Rooms (m)	Total Volume of Cold Storage (m3)	Isoterm. Lorries (Tons)	Wholesale Marketing Nos. Of Stalls	Volume of Cold Store Installed in each Marketing (m3)	Size of Marketing Building (m)	Air Port Cold Storage Volume (m3)	Size of Airport Building (m)	Ratio of Citizens (City) per m3 Cold Storage	Ratio of Citizens (Prov) per m3 Cold Storage	Price US\$ (000)
BALUCHISTAN	6,970	Quetta	560	30x20	3x(7.5x7.5x6) 1x(7.5x5x6) 1x(7.5x12.5x6) 1x(7.5x10x6)	2,250	2x(3T)						249	3,098	1,559
SINDH	30,620	Karachi	9,270	105x45	19x(15x10x7.8)	22,230	6x(15T)	20	1,120	44x21	3,942	28x34	340	1,122	11,481
PUNJAB	76,140	Islamabad	530	30x20	3x(7.5x7.5x6) 1x(7.5x5x6) 1x(7.5x12.5x6) 1x(7.5x10x6)	2,250	2x(3T)	6	336	16x21			205	2,767	2,236
		Rawalpindi	1,410	30x20	3x(10x15x6) 1x(10x7.5x6) 10x(10x15x7.8)	3,150	3x(3T)							448	1,763
		Lahore	5,000	70x35	11x(15x10x7.8)	11,700	3x(15T)	10	560	24x21			407		5,558
		Faisalabad	1,980	40x22.5	3x(15x10x7.8)	4,700	2x(8T) & 1x(3T)	8	448	20x21			385		2,999
		Multan	1,180	30x25	3x(10x15x6) 1x(10x7.5x6)	3,150	3x(3T)				1,026	14x18	283		2,516
NWFP	17,800	Peshawar	980	30x35	3x(10x15x6) 1x(10x7.5x6)	3,150	3x(3T)						311	5,650	1,763
TOTAL						52,580			2,464		4,968				29,875

14.11. Appendix---Kinow Farmer Costs Comparison

Description	Under Non-Standardized Set-Up	Under Proposed Set-Up
Kinow (Farmer Costs)	Per Acre	
Yield (MT) SMEDA Survey	6	6
Tree Age (Years)	40	40
Peak Productive Period (Years)	20	20
Cost of Farming/Acre	Rs	Rs
Fertilizer (1 Bag TSP, 5 Bags Ammonium Nitrate)	1,715	1,715
Pesticides	1,000	1,000
Cultivation (8 Ploughing @ 120/Plough)	960	960
Irrigation (with Tubewel 6-7 times)	300	300
Land Revenue	500	500
Labor @Rs2000/man/month	1,600	1,600
Income Tax	500	500
Opportunities Cost (Land Rent/Lease)	4,000	4,000
Additional expense (first 5 non-productive years)	685	685
Additional expenses for obtaining premium quality		2,000
Total	11,260	13,260
Cost/Ton (@ 6 tons per acre yield)	1,877	2,210
Cost/Kg	1.88	2.21
Cost/Ton in US Dollars (\$)	36	43
Farm Auction Price per Acre (Rs)	22,000	28,000
Farm Gate Value after Auction \$/Mt	71	90
Farmer Margin \$/Ton	35	47

Source: SMEDA Field Survey

14.12. Appendix---Export Options

Level 1

Improve Export Quality Only

Production & Export	1996	1997
Total Production (MT)	2,003,000	2,037,000
Exportable Quantity 25% of total Production (MT)	500,750	509,250
Actually Exported (MT)	48,338	89,000
% Exported of the total production (%)	10	17
With US\$500 pr metric ton value (US\$)	24,169,000	44,500,000

Above shows that if Pakistan simply improves its quality, with value of US\$500 per metric ton, it can achieve total value of US\$44.5 million in the year

Level 2

Improve Export Quantity and Quality

Production & Export	1996	1997
Total Production (MT)	2,003,000	2,037,000
25% Exportable Quantity	500,750	509,250
Actually Exported (MT)	48,338	88,580
% Exported	10	17
60% of Exportable Quantity	300,450	305,550
At US\$600 per Mt, export earnings should have been	180,270,000	183,330,000

14.13. Appendix---Proposed P & L of Kinnow Processing plant

Profit & Loss: Kinnow Processing Plant (Cap: 10Tons/Hr) Proposed

	SCH	%	Year 2005
Kinnow available for Exportable Sales (Mt)	A-I		8,100
Sales Revenue from Kinnow Exports	A-I		252,720,000
Less Sales returns (lost sales)	M-II	11%	25,272,000
Net Sales revenue from, Kinnow exports		99%	227,448,000
Sales of Sorted Kinnows	A-I	1%	3,178,868
Total Sales (Rs.)		100%	230,626,868
Operating Costs			
Electricity Cost of Processing Plant during Season	E-III	0.03%	54,000
Electricity Cost of Cold Storage during Season	E-III	0.2%	280,000
Fuel (Diesel) for Wax Burners	F-I	0.1%	178,200
Fuel (Diesel) for Trucks	F-II	0.1%	138,240
Rental of Trucks for Kinnow Picking	E-I	0.6%	900,000
Transportation	D-I	10.3%	16,049,988
Processing Costs			
Kinnow Purchase during Season	C-III	44.7%	70,031,250
Waxing	C-V	1.0%	1,620,000
Seasonal Labour	C-I	0.2%	292,500
Packing Material Cost	C-II	23.6%	36,926,464
Total Operating Cost		80.8%	126,470,642
Gross Profit			104,156,226
ROS			45%
Fixed Charges			
Salary	C-IV	0.2%	276,000
Electricity & fuel charges	E-III	0.0%	7,500
Repair & Maintenance	J-I	0.1%	100,433
Depreciation Expense	G-II & III	0.5%	760,635
Supplies	G-IV	0.0%	67,200
Financial Cost on Advance Purchases	F-III	0.3%	525,234
Financial Cost on LT Loan		2.1%	3,352,512
Total Fixed Charges		3.1%	4,813,514
Other Costs			
Marketing cost	M-I		25,272,000
Total Cost		100%	156,556,156
Net Profit/(Loss)			74,070,712
Net Profit Percentage			32%
Balance Brought Forward			
Total Profit Available for Appropriation & Tax			74,070,712
Dividend		0%	-
Balance Carried Forward			74,070,712
ROI			239%
Weight of exportable Kinnows in total sales			99%
Variable Cost per MT of Kinnow Exports		\$	296
Purchase Cost per MT of Exportable Kinnow		\$	159
Processing Cost per MT of Exportable Kinnow		\$	205
Fixed Cost per Metric Ton		\$	11
Total Cost per MT		\$	364
Packaging Cost for Exportable Kinnows/Mt		\$	88

14.14. Appendix--- *Kinow Contractor's Cost Break-UP*

Kinow Contractors' Cost Break-Up	Under Non-Standardized Set-up				Under Proposed Set-Up			
Contractor Cost Break-up	(Rs)				(Rs)			
Purchase of Farm (6 Mt/Acre)	22,000				28,000			
Advance Payment @ 25%	5,500				7,000			
Financial Cost @18% per annum	495				630			
Total Cost	22,495				28,630			
Sale of Kinow:	MT	Rs. / Mt	Total	\$ / Mt	MT	Rs. / Mt	Total	\$/Mt
Exportable quantity (Mt)	1.5	6,250	9,375	118	2.4	6,910	16,584	130
B-Class for Local Market (Mt)	3.6	4,500	16,200	85	2.7	5,500	14,850	104
Sales to Juice Processing Units (Mt)	0.9	1,500	1,350	28	0.9	2,500	2,250	47
Total	6		26,925		6		33,684	
Weighted Avg. Price	85				106			
Less Cost per MT	71				90			
Profit Margin per MT	14				16			

SCHEDULE
Kinnow Processing Plant (10 Ton Capacity) Proposed

₹=Rs.52

SCH A-I Kinnow Sales

	QTY (MT)	US\$/MT FOB KHI	US\$ Total	Rs
Model (i)				
Exports 8100 Mt Tons				
Middle East (50%)	4,050	170	688,500	36,490,500
Far East (25%)	2,025	186	376,650	19,962,450
Europe (25%)	2,025	230	465,750	24,684,750
Sale of Wastage (20% Chant of 8100 Mt) to Local Juice Procesors @ Rs1500/Mt	2,025		57,311	3,037,500
Total Cash In-Flow		195		84,175,200

Model (ii)				
Kinnow Exports (to be achieved)	8,100	600	4,860,000	252,720,000
Sale of Wastage (20% Chant of 8100 Mt) to Local Juice Procesors @ Rs1600/Mt	2,025		61,132	3,178,867.92
Total Cash In-Flow	10,125			255,898,868

SCH B-I Building Cost

Processing Unit	Qty	Area sft	Rate/sft	Rs.
Main Hall (with stocking cap. of 10,000 cases of 10kg each) 60'x100'x14' @Rs 200/sft	1	6,000	200	1,200,000
Office (10'x15'x12') @Rs 200/sft	1	150	200	30,000
Store Room (15'x15'x12) @Rs 200/sft	1	225	200	45,000
Store cum Generator Room (10'x10'x12') @Rs 200/sft	1	100	200	20,000
Toilet (6'x6'x10') @ Rs 200/sft	1	36	200	7,200
Shed for Timber Saw and Plainer (lum sump)	1			10,000
Total				1,312,200

Cold Storage				
Earth Filling			Lumpsum	100,000
Boundary Wall + Gate			Lumpsum	150,000
Total				250,000
Grand Total				1,562,200

SCH C-I Labour

Labour	Plant Capacity (Mt)	No of Staff	Rate/month	per Month	4.5 months (135 days)
Seasonal Labour	8,100	26	2,500	65,000	292,500
Total Labour					292,500

5% increase per annum

SCH G-I Cold Storage**Insulation & Fixture Costs**

Polyurethane insulated sandwich panels (3000 sft)	2,850,000
labour charges for installation of cold store	65,000
Transportation, octroi & insurance charges	25,000
Installation charges for refrigeration system upto 50 feet	110,000
Total Cost of Cold Storage Insul., fixtures, labour and transport	3,050,000
Sales tax @ 15%	427,500
Total after Sales Tax	3,477,500

Machinery & Equipment

Condensing unit (665,000)	665,000
Evaporator unit (210,000 x 2 Nos)	420,000
Total Cost of Machinery & Equipment	1,085,000
Sales Tax @ 15%	162,750
Total after Sales Tax	1,247,750
Total Cost of Machinery & Equipment Incl Installation and Sales Tax	4,725,250

SCH G-II Cold Storage Depreciation

(Rs)

At straight reducing Method (amortized over 10 years)	
Cost of Machinery, Insulation & Fixtures	4,725,250
Depreciation cost per annum	472,525

Cost of Processing Plant	1,600,000
Cost of Allied Machinery (Generator reconditioned)	500,000
Total Cost	2,100,000
Depreciation cost per annum	210,000

SCH G-III Building Depreciation

(Rs)

At Straight reducing Method (amortized over 20 years)	
Cost of building for Processing Unit and Cold Storage	1,562,200
Depreciation cost per annum	78,110

SCH G-IV Plastic Buckets Wastage Cost

(Rs)

Cost of Plastic Bucket (container) capacity 20 Kg	350
Total cost of Plastic Buckets (Nos.4,800)	1,680,000
Breakage of Containers @4% per annum	67,200

SCH C-II Cost of Packing Material

Card Board Carton for 10KG each (Rs)	35	35
Dividers (3 ply water proof) each Rs1.25 (3 Dividers in each Cartoon/Case (Rs)	3.8	3.8
Total Cost of Packing Material per Box	38.8	38.8
No. Of Cases for 8100 tons of Kinnow	952,941	
Total Packing Cost (Rs)		36,926,464

SCH C-III Kinnow Purchase**Model (i)**

Kinnow Purchase (December) Inc.20%Wastage (Rs/Kg) "1 months"		6.5
Kinnow Purchase (Jan- Feb) Inc.20%Wastage (Rs/Kg) "2 months"		6.8
Kinnow Purchase (March - 15 April) 20% Wastage (Rs/Kg) "1.5 months"		7.5
Average Price During Season (Rs/Kg)		6.9
Total Quantity of Kinnow Purchased (Mt)		10,125
Total Cost of Kinnow Purchase		70,031,250

Model (ii)

	Qty (Mt)	
Purchases during 1 months @ Rs.5.4/Kg	2,250	12,150,000
Purchase during 2 months @ Rs.6.25/Kg	4,500	24,300,000
Purchases during 1.5 months @ Rs 6.75/Kg	3,375	22,781,250
Total Purchases	10,125	59,231,250

Model (iii)

Purchases (Pre-fixed Prices for the whole season @250/40Kg) i.e. 6.25/Kg	10,125	63,281,250
5% increase in Kinnow Purchase price		62,192,813

SCH C-IV Salary**Permanant Staff**

	No.	Rate (Rs/month)	Total (Rs/annum)
Unit Manager	1	5,000	60,000
Processing Plant Operator	2	3,000	72,000
Skilled Mechanic	1	5,000	60,000
Semi Skilled Technicians	2	2,500	60,000
Security Guard	1	2,000	24,000
Total	7	17,500	276,000
10% increase after 2nd year			303,600

SCH C-V Waxing

	Rs/Litre
Wax (imported Brand RODA, 200 litre Drum)	250
Total Quantity of Kinnow Processed (Mt)	8,100
Approx weight of Kinnow processed per litre of Wax (Mt)	1.25
Total Wax required (Litres)	6,480
Total Value of Wax required (Rs)	1,620,000
5% increase per annum	

SCH D-I Inland Transportation

Transportation (Bhalwal to Khi) Reefer Containers (40 feet) Capacity 27 Tons

Trawler Cost (Rs 40,000) for 27 Tons

Clip on Cost "Gen set" (Rs 13,500)

Total Qty.

QTY	US\$/MT (\$=52)	Rs/Mt	Total Cost (Rs)
		28	11,999,988
	9.62	500	4,050,000
8,100			

Total Cost**16,049,988**

5% increase per annum

SCH E-I Truck Rental**Trucks Rental (10 Ton Capacity)**

5% increase per annum

QTY	Rent/month (RS)	Total for Month (Rs)	Total Rent for Season of 4.5 Months(Rs)
8	25,000	200,000	900,000

SCH E-II Electricity Connection Charges**Wapda Electricity connection charges****200,000****SCH E-III Electricity Cost**

Billing of Processing Plant (4.5 months) (1800Mt/month)

Billing during Idle months

Billing of Cold Storage for 7 months

Total Billing

5% increase per annum

(Rs/month)	Whole season
12,000	54,000
1,500	7,500
40,000	280,000
	341,500

SCH F-I Diesel for Wax Burners**Diesel for Waxing Burners (Litre/Ton of Kinnow processing)**

5% increase in Diesel price per annum

Litre/MT	Qty (Mt)	Rs/Litre	Total (Rs)
2	8,100	11	178,200

SCH F-II Diesel for Trucks**Diesel for Truck (Approx Journey/Day =70Km with Ave. 6km/Litre) @Rs 11/Litre**

5% increase in Diesel price per annum

(Rs/day)	No. Of Trucks	Total days	Total Diesel (Rs)
128	8	135	138,240

SCH F-III Financial Cost

Purchase of Kinnow During the season (10,125 Mt)

Payment for 15 days of production stock

Financial Cost of Advance Payment @18% per annum for 4.5 months

Ave. Price/Mt (Rs)	Qty	Total Amount
6,917	10,125	70,031,250
6,917	1,266	8,753,906
		525,234

14.15. Appendix--- Financials

Kinnow Processing Plant (10 Ton Capacity) Proposed

Assets

Current Assets

Cash & Bank	11,300,426
Kinnow Stock	8,753,906
Total Current Assets	20,054,332

Fixed Assets

Land	720,000
Building & Infrastructure & Electricity Connection	5,239,700
Machinery	2,847,750
Allied Machinery & Equipment	2,180,000
Total Fixed Assets	10,987,450

Total Assets **31,041,782**

Capital Structure	Percentage	Rs
Debt	60%	18,625,069
Equity	40%	12,416,713

Loan	18,625,069
Payback Period	
Rate	18%
PMT	-4,886,510

Year	Beginning Principle	Annual Payment	Interest Payment	Principle Payment	Ending Principle
1	18,625,069	-4,886,510	3,352,512	-1,533,998	17,091,071
2	17,091,071	-4,886,510	3,076,393	-1,810,118	15,280,954
3	15,280,954	-4,886,510	2,750,572	-2,135,939	13,145,015
4	13,145,015	-4,886,510	2,366,103	-2,520,408	10,624,607
5	10,624,607	-4,886,510	1,912,429	-2,974,081	7,650,526
6	7,650,526	-4,886,510	1,377,095	-3,509,416	4,141,110
7	4,141,110	-4,886,510	745,400	-4,141,110	0

Kinnow Processing Plant (10 Ton Capacity) Proposed

Working Capital

				Based on months
Salary	C-IV	276,000	46,000	2 m
Operating Costs				
Kinnow Purchase during Season	C-III	70,031,250	8,753,906	15 days stock
Electricity Cost of Processing Plant during Season	E-III	54,000	12,000	1 m
Electricity Cost during Idle period	E-III	7,500		
Electricity Cost of Cold Storage during Season	E-III	280,000	40,000	1 m
Plastic Buckets Wastage/Breakage	G-IV			
Fuel (Diesel) for Wax Burners	F-I	178,200	39,600	1 m
Fuel (Diesel) for Trucks	F-II	138,240	30,720	1 m
Rental of Trucks for Kinnow Picking	E-I	900,000	200,000	1 m
Maintenance of Machinery	J-I	100,433	8,369.38	1 m
Processing Costs				
Waxing	C-V	1,620,000	360,000	1 m
Seasonal Labour	C-I	292,500	65,000	1 m
Packing Material Cost	C-II	36,926,464	8,205,881	1 m
Transportation	D-I	16,049,988	2,292,855	1 m
Total Working Capital			20,054,332	
Cash in Bank Requirement			11,300,426	