Branding in Selected Value Chains in Pakistan

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The Agribusiness Project - Agribusiness Support Fund

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Table of Contents

I. Background …… 1
II. What is Branding? …….. 1
A. Product Brand …… 1
B. Other Types of Branding …… 4
1. Mark of Certification ……. 4
2. Seal of Quality …… 4
3. Geographical-based Brands …… 5
4. Promotion ……... 5
C. Branding in the Fruit and Vegetables Sector ……. 6
D. The Growth of Fruit and Vegetables Marketing in Modern Retail Stores in Pakistan …….. 8
E. Branding in the Retail Food Sector …… 9
F. Branding of Fruits and Vegetables in Retail Stores ……... 10
III. Current Marketing and Branding System …….. 13
A. The Current Marketing System ……. 13
B. Branding and Trade Promotion ……. 17
C. State Bank Interventions in the Agricultural Marketing System …….. 22
IV. Branding and Promotion Recommendations for Selected Value Chains …….. 23
A. HVOS (High Value Off-Season) Vegetables …… 23
B. Grapes …… 24
C. Bananas ……. 24
D. Chilies …… 25
E. Recommendations for Future Projects …….. 26

Annexes:

Annex I – Branding Power Point
Annex II – Fruit and Vegetable Marketing System in Pakistan
Annex III – List of People Contacted in Pakistan
Annex IV – Sample Grade and Standards, Tomatoes and Grapes, US Department of Agriculture

List of Figures:

Figure 1 – Brands and Brand Strategy
Figure 2 – Mark of Certification – Thai Jasmine Rice
Figure 3 – Local Pakistani Brands
Figure 4 – Fruits and Vegetables in Metro
Figure 5 – Imported Fruits and Vegetables in Supermarket in Lahore
Figure 6 – Tomatoes Transported in Plastic Bins and Displayed in Stainless Bins
Figure 7 – Store Brands for Domestically Produced Agricultural Products
Figure 8 – Branded Local Mushrooms
Figure 9 – Simplified Marketing Structure of Fruits and Vegetables in Pakistan
Figure 10 – Updated Food Marketing System
Figure 11 – Tall Tunnel Technology for HVOS Vegetables
Figure 12 – High Quality Boxes for the Export of Vegetables
Figure 13 – Inexpensive Trade Promotion

I. Background

The Agribusiness Support Fund (ASF) has been implementing a 4-year project, The Agribusiness Project (TAP) for USAID. TAP uses a value chain and cluster-based approach to increase the competitiveness of the selected horticulture and livestock sub-sectors. TAP, through the International Market Access and Linkages Program, aims to facilitate a significant increase in sales to domestic and international markets within the target value chains by providing support to key stakeholders including selected farmers, traders, processors, and exporters. The program, implemented by J.E. Austin Associates, Inc., encompasses technical assistance for market explorations, the development of agricultural marketing, and brand development strategies directed at identifying and capitalizing on opportunities in high-price local and international markets where Pakistan can participate and strengthen its market share on sustained basis. The program works with medium and large agribusinesses and farmer enterprise groups to identify gaps with regard to the competitiveness of the value chain that could be addressed through project assistance.

As part of the International Market Linkages Program, the positioning and branding of Pakistani products is important in order to facilitate increased exports, increased sales in the domestic markets, and improved margins for producers. The objective of this Technical Assistance is to work with the value chain members, including farmers, merchants, processors, and the export community to develop an approach to position and brand products such as meat, citrus, HVOS (High Value Off-Season) vegetables, and chilies with the goal of identifying branding strategies for priority value chains.

Branding can be a powerful tool to increase revenues for the companies and associations that have successfully developed and implemented a branding strategy. As we will learn later, many agricultural products do not lend themselves to "classic branding." Trade promotion (another form of "branding" broadly defined) is more appropriate to many groups in the agricultural sector. However, the kinds of questions one would ask to undertake successful trade promotion are the ones that groups would ask when developing a brand. Hence, in Section II and Annex I, we provide a short general section on branding and the questions one would ask in developing a brand.

II. What is Branding?

A. Product Brand

A unique name for a product or commodity is often termed a "brand" and is most often owned and controlled by a private company, be it an exporter, importer, food packager, or retail supermarket. A brand is often a combination of a name and also a symbol/logo.

The ownership and uniqueness of the "brand" is enforced by registration as a trademark. Control of a brand is often difficult as other companies will often copy a popular brand with a similar name or symbol/logo. It is the sole owner of the "brand" that needs to be continually diligent in enforcing its legitimate use, often through legal means.

Brands are a promise to the consumer! A brand promises that the product will be the same each time it is purchased. Quality control is a must. The brand must assure the quality promised. Furthermore, it should personalize the product to tastes of a target audience.

The brand must build, maintain, and protect a positive image, high awareness, and product preference in the buyer's mind. The brand seeks to differentiate the product, but consistency and quality are critical elements in the process of branding.

Your brand should link into seven key principles of branding:

1. It must capture the product's uniqueness, essence, or spirit with a big idea /concept
2. It should win the attention of target markets and inspire the imagination
3. It must be of appropriate quality
4. It should be kept simple
5. It should be based on an image (and sound) that makes it unforgettable
6. It must be appropriate for your target audience
7. It must reinforce what you claim the product is capable of delivering (i.e. fruit and vegetables taste great!)

For a list of seven principles, please visit International Fruit and Vegetable Alliance (http://www.ifava.org/about-ifava/)

When is a company ready to place a brand on its product? A company is ready when it can make a promise to its customers of providing the same quality and service on every order (for the next 5 years). If a company is not ready to do this, it is better to wait to begin a branding campaign. A brand that is associated with negative reactions from consumers is in trouble.

What is your market niche? One critical element of branding is having a clear understanding and definition of **who buys your product and why** (also known as your market niche). You should define your market niche through:

- Researching your market.
- Defining a customer profile (location, type of business (importer, supermarket, restaurant, etc.)

Understanding the target audience defines how you will carry out a branding strategy and marketing plan in a cost effective manner.

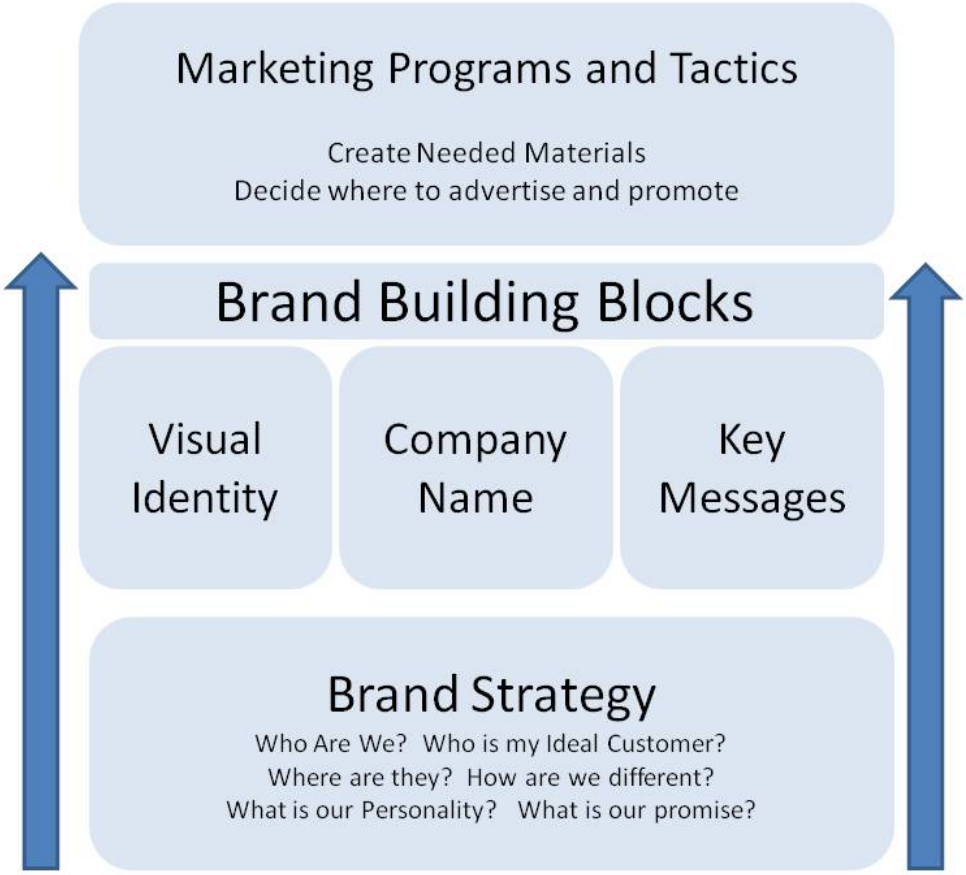
Budgeting for a brand is another important issue. **A brand should create increased sales, greater margins, and improved return on investment.** However, the cost of branding must be kept at a level that is well below the increase in sales and marginal revenues. Key costs that must be considered include:

- Market Research
- Name Development
- Logo Development
- Development of support materials such as a web site, printed material, brochures, attending food shows, etc.
- Advertising
- Signage
- Packaging, etc.

Once companies have begun to define their brand promise, the uniqueness of their products, the composition of the target buyer segment, and an estimate of the costs of developing a brand, it becomes possible to put together a brand strategy.

Figure 1 presents a graphic representation of the process of determining a brand strategy and then building a marketing program around that brand strategy.

Figure 1 – Brands and Brand Strategy



Source: Branding Basics for Small Business, How to Create an Irresistible Brand on Any Budget, Maria Ross, NorLightsPress.com, 2010. ISBN: 978-1-935254-24-9

A summary of other branding issues is contained in Annex I, including a series of questions that should be asked when determining a brand strategy.

B. Other Types of Branding

1. Mark of Certification

A mark of certification is a logo given by a certifying body that the company has met the quality standards required to use the mark of certification. For example, Thailand has developed a strong mark of certification for fragrant (jasmine) rice, known as "Thai Hom Mali." The "*Thai Hom Mali*" is a registered mark of certification owned by Thailand's Department of Foreign Trade, and a standard defined by government regulations.

The "*Thai Hom Mali"* name and mark of certification is based on specific quality standards. Exporters and marketers are only allowed to use both the name and the circular green certification mark on their package, if they meet and maintain the specifications and quality standards required by the Department of Foreign Trade.

The Thai green mark of certification is visible on exporters and importers' branded products internationally, and commands respect from importers and consumers. One of the leading U.S. importers of Thai jasmine rice indicated that the mark of certification is an important marker of quality. They use the Thai name, "*Thai Hom Mali*" and the certification mark on his firm's own "*Lucky Elephant*" branded products. Importers and distributors in the EU also indicated the mark was important and use it on their labels.

Figure 2 – Mark of Certification - Thai Jasmine Rice

2. Seal of Quality

There are a number of certifications that, while not brands in the technical sense, can be very important in creating an image of quality, particularly in international markets. Hence, certifications or the seal of quality from GLOBAL G.A.P; BRC; HACCP; and other international quality certificates are crucial to gaining market share in international markets. Third-party certification of quality standards by reputable international certifiers can also be important. Other certifications are available for "organic" products, while yet others exist for the certification of environmentally sustainable manufacturing and raw materials acquisition.

3. Geographical-based Brands

A further refinement of a product name or quality certification is to define a regional name and specification. Such geographical brands – known in the EU as Protected Geographical Indication or PGI – relate to specific regions within a country where a unique food product is produced. These PGIs are gaining worldwide importance, as consumers look at a global marketplace and seek greater information about the offered products to distinguish them. Consumers are becoming very sensitive to where the food product was produced, how it was produced, what chemicals were used in producing the product, etc.

The EU is a leader in the use of such brands. In the EU, there are a number of geographically designated product brands, such as Champagne, Parmigiano-Reggiano Cheese (450 small dairies in Italy), etc., which have established an international recognition and loyal consumer following over a long period of time. The increasing sensitivity of consumers and media to food sources and quality in turn translates into increased sensitivity by European and American food processors/packagers and retailers to food quality standards, as well as traceability.

It may be possible to mitigate the effort and cost of a geographical brand by tying it to a land and water conservation program and, in turn to that program's specifications. The geographical designation can indicate certain conservation measures used to ensure the sustainability of the product and its production. Such a program could attract external funding.

There are also international legal issues to address with geographical trademarks and brands. Initiating a geographical brand requires legislation in the host country, as well as other countries that would have to recognize such a PGI. Certainly, there are many cases of significant premiums being realized with geographical brands, although the pay-off is often 5 - 10 years in the future when the market recognizes the PGI and associates it with consistent quality. A cost benefit analysis would have to be part of the determination process of whether to pursue a geographical brand. Still, in the short-run, it would give a marketer something to talk about, rather than only talk about the price of a product. It also provides publicity and gives promotion programs something unique to talk about. A geographical brand allows marketers to tell a story of why this area is important. The feasibility and complexity of the implementation of a PGI requires further market and economic research to determine the practicality of such a program for Pakistan.

4. Promotion

A number of low cost methods of promoting a food product exist, and a number of common methods are listed below. Promotion is cumulative and additional low cost options have now been added with the growing use of the internet.

<u>Trade Promotion</u>: While brands are often targeted to reach consumers, it is also desirable and cost effective to create logos, promotional materials, and other means of promoting a company to buyers and other value chain members. Like for consumer brands, it is important to associate one's product with quality, reliability, and consistency.

<u>Associations:</u> There are a number of different kinds of associations that can benefit small players in a sector. A cooperative is a specific, legal from of a producer association, often with tax and other benefits. A marketing association could provide scale to a group of small growers allowing them to market to larger entities; undertake joint promotion activities; and

negotiate a better price for their product and possibly a better price for inputs. Being able to maintain defined standards is a critical element of a successful marketing association.

Beside logos on boxes, an association can serve to present a unified promotional narrative for a product by producing a simple document that gives a short history of the growers, a short profile of the typical farmer, and the standard grades and types of produce available. This document can be used by exporters visiting potential importer clients, as well as domestically for supermarket and chain store buyers. It is particularly useful at trade fairs.

An industry association can be an important advocate for companies to address export markets as well as domestic issues. This bigger association can be a vehicle for promoting products for export and obtaining government or donor support for export promotion.

Trade Shows: Establishing a booth at and attending key food trade shows is important when targeting new markets or maintaining existing markets. Important shows to attend are SIAL in France, ANUGA in Germany, and the Fancy Food Shows held in both San Francisco and New York in the U.S. each year. There are also hospitality and other specialized (i.e. organic) trade shows, which can provide marketing opportunities for agricultural products. Such shows provide an opportunity to meet new and existing customers, view competition, and combine travel for the show with targeted meetings with importers.

For large international shows, companies most often join a country pavilion as a way of differentiating the country and its products from the numerous varieties of food products present. Since the shows are large, it is very important to plan other events around the show to connect meaningfully with buyers. Again, assistance from the commercial section of the embassy can bolster the beneficial effects of show attendance. It is also important to pre-arrange particular meetings with importers in order to take full advantage of the numerous buyers present at such events. The list of contacts generated from these shows would be helpful in targeting importers, supermarkets, and chain stores.

Fruit and Vegetable Marketing Orders: These marketing orders help fruit and vegetable growers work together to solve marketing problems that they cannot solve individually. They help balance the availability of quality product with the need for adequate returns to producers and the demands of consumers.

Marketing orders in the United States are formed by a vote of the producers following a regulatory framework established by the U.S. Department of Agriculture. If more than 50% of the growers vote to form a marketing commission, then the Marketing Order is formed and is given the power to collect a small tax from all growers on each unit of product sold. The money collected is used to undertake generic advertising for the product type; do research on specific problems faced by the sector; develop new food products; and undertake other activities of benefit to the sector, as agreed to by the members. If members are not happy with the activities of the Marketing Order, they can vote to disband the Marketing Order and cease the taxation on their products. Marketing Orders are a way of solving one of the most difficult problems of farmers' associations, the issue of funding the association. Among the most successful Marketing Orders in the United States are dairy, citrus, cranberries, and almonds.

C. Branding in the Fruit and Vegetables Sector

Branding has generally been considered difficult in the fruit and vegetable sector, given the difficulty of differentiating the product from other exemplars. One study in 2000 noted that

there were fewer brands among fruits and vegetables, with only 19 percent of the retail fresh produce sales were under a brand name in 1997. (Kaufman, P., C. Handy, E. McLaughlin, K. Park, and G. Green (2000). Understanding the Dynamics of Produce Markets: Consumption and Consolidation Grow. USDA/ERS AIB-758.). The guiding principle at that time was that the highest quality products will be sold under the brand name while the lower quality goods will be sold as generic products (without identifying the manufacturer).

However, in recent years, consumer brands have become more important in the fruit and vegetable sector. For example, an article describing recent advances in the branding of fruit and vegetables in India suggested:

> "The boom in branded produce is accelerating on two fronts. National and international brands have made a name for themselves in every category, from berries to bagged salads. In addition, the demand for local produce has spurred retailers to build brand awareness for growers in their areas, promoting names and logos of local farms on signage throughout the department. As consumers have become more health-conscious, they've also become more aware of the quality and purity of the products and ingredients in their shopping carts. In this climate, branding has become more imperative."
>
> (http://www.indiaretailing.com/FoodGrocer/7/42/45/10240/Branding-of-Fruits--Vegetables).

The article goes on to note that a visit to your local superstore will make the point clear. In Tesco, for example, you will find apples featuring Winnie the Pooh and other Disney characters; in Asda, you will meet The Great Stuff Garden Gang on carrots; and going to Sainsbury may introduce you to the concept of Kids Apples. Moreover, marketers are now inventing new concepts like 'fun size apple' and 'easy peelers' to further establish fruit brands.

In the United States, Los Angeles-based, Paramount Farms, the business behind the highly successful Wonderful Pistachios, Cuties Mandarins, and POM fresh pomegranate juice, has been able to create dynamic brands that appeal to the desire of consumers for quality and consistency in the produce department. Driscoll's is an example of a brand that has captured a large share of the berry market especially in raspberries, blueberries, and blackberries. Driscoll's sources its berries from many farms, but growers are required to adhere to the high quality standards of the brand.

Another article on Branding in the Fruit and Vegetable Sector, notes that there have been many horticultural brands established in recent years aimed at buyers in the trade. For example,

"The Dutch horticulture sector has developed brands during the past decade such as Tasty Tom, Les Meilleurs (strawberries), Salanova (lettuce), Tinkerbell (sweet peppers) and Koppert Cress. In the United States, horticultural brands currently in the market include Sygenta flowers, Proven Winners®, Novalis® Plants that Work®, Garden Splendor®, among others." (http://www.ijaiem.org/volume3issue4/IJAIEM-2014-04-27-061.pdf)

The article goes on to note that brands will only survive when the organization investing in the brand receives some benefit. Not every organization is able to do that, and thus, **many**

fruit and vegetable products will remain unbranded. Finally, the article suggests that:

> "Branding in the fruit and vegetable sector has not been fully developed or explored. However, some recent forays have shown that given the proper positioning and retailer, branded fruits and vegetables can successfully boost an entire category – store brands and all. Retailers are under constant pressure to differentiate in order to win a larger share of consumers' wallets, and carrying distinctive brands can go a long way toward enhancing store image perception and gaining shopper loyalty. No matter the strategy, the brand has to resonate with the target consumers. Choosing a brand that fits with the message the store wants to give to shoppers is vital to success. In some retailers, it might work to demonstrate a commitment to the community by stocking a locally made brand."

The modern retail stores in Pakistan are growing in number and they are putting more and more emphasis on fruits and vegetables, including branded products from international companies and from domestic companies. We will now discuss the growth of these retail stores and their fruit and vegetable departments.

D. The Growth of Fruit and Vegetables Marketing in Modern Retail Stores in Pakistan

According to a recent article[1], Pakistan's retail sector plays a key role in the economy of the country. The total turnover of the retail sector in Pakistan comprises 17% of the GDP. Retail is the third largest sector in Pakistan after agriculture and manufacturing, and the second largest employer, employing 16% of the total labor force. Pakistan's retail market is estimated to be worth approximately USD 42 billion. The growth of the retail sector is estimated to be 8% per annum, although this may be lower in years of lower economic growth.

An average Pakistani spends 42% of his income on food items. Pakistan is an emerging market for processed food products, both domestic and imported.

The Pakistani retail sector is also dominated by the traditional small shops which are known as "Karyana" in the local language. These outlets exist all over the country. They have a small number of items of daily use for sale in limited quantities. Usually, they are located near residential areas, have a small footprint, and have a space for one freezer for freezing perishable products.

The next format of retailing is general store and these stores are also scatter all over the country. Compared to karyana stores, these general stores have more items and the average merchandise area of the store is also bigger than the area of the average karyana store. They have a space for 2 or 3 freezers and the area of the floor is usually from 500 to 3000 square feet.The third format is department stores. These stores are larger than the general stores and usually they have more items than the general stores and the merchandise area is from 3,000 to 6,000 square feet.

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[11] **The Retail Food Sector in Pakistan: Manzoor, Ahmed Shafi Ullah, Zia Ul Haq Paracha.** Researchers, College of Business Administration, King Saud University Riyadh Saudi Arabia, International Journal of Academic Research in Business and Social Sciences, Dec. 2012, Vol. 2, No. 12

The modern format of retailing is the establishment of chain stores by local and foreign investors in Pakistan. They have outlets in all the big cities of the county. The foreign chains operating in Pakistan include Metro, Makro, and Hyperstar (Carrefour). Local investors have also played a key role in bringing about a revolution in the retail industry of the country and they have also established chain stores in big cities of the country.

Modern chain stores are very popular among the elite and higher classes of society. These groups usually make their food purchases principally from these stores. The market share of the chain stores in food retailing business is estimated to be between 2 – 4%, reaching a possible high of 5% by the end of 2014. If the growth of "organized" retail in Pakistan resembles the growth of similar retailing in India[2], the retail sector will continue to grow in size and importance.

The final format is the establishment of Gas Marts or Kiosks by the oil companies usually at a busy filling station. Like the chain stores they have a standard shape throughout the country. The area of such a type of store is from 200 to 500 square feet and stocks a limited line of products.

E. Branding in the Retail Food Sector

Pakistani consumers are surrounded by both international and domestic brands. Many international brands such as Nestle, Coca-Cola, Pepsi, and the brands of Unilever and Proctor & Gamble are present throughout the country. But there is also a large food processing industry in the country, and they use many local brands (See Figure 3).

Many of the food companies have in-house advertising and branding departments, including graphic artists and media strategy specialists. Companies may spend on average 30-40 million Rs. (US$ 300,000-400,000) developing a brand. Some brand development may cost considerably more. Consultants may be hired to conduct focus groups and taste trials in schools or other venues. Statistical analysis and polling may be contracted out to international companies such as Gallup or AC Neilson. Companies put together marketing strategies that take advantage of existing media, road shows, and other events.

A marketing consultant suggested the companies will break down their marketing spending on average into the following categories:

50% - Direct Marketing
40% - Advertising: TV, Radio, Newspaper
10% - Sponsorships, Events, Road Shows, etc.

[2] In 2013, the Indian retail sector was estimated at US$ 520 billion and was among the largest employers in the country. By 2018, the Indian retail sector is likely to grow at a compound annual growth rate (CAGR) of 13 per cent to reach US$ 950 billion. Food and grocery is the largest category within the retail sector with a 60 percent share. Organized retail, which constituted seven per cent of total retail in 2011-12 is estimated to grow at a CAGR of 24 percent and attain 10.2 percent share of total retail by 2016-17, according to a study titled 'FDI in Retail: Advantage Farmers' conducted by an industrial body. Of the overall retail market in India, unorganized players controlled 92 per cent market share during 2013. Organized retail is expected to account for 24 per cent by 2020. Rapid emergence of mega malls and hypermarkets are augmenting the growth of organized retail in the country.

Figure 3 - Local Pakistani Brands

F. Branding of Fruits and Vegetables in Retail Stores

When customers come into Metro, Hyperstar, Imtiaz, or other supermarkets in Pakistan, they expect to see bins of local fruits and vegetables that are graded and sorted (See Figure 4) that range from good to excellent in quality. They must be price competitive with the fruits and vegetables found in small shops, albeit at the same level of quality. The branding that is being done is essentially a store promise to offer well priced produce of good quality, which works well with the target market for these stores (middle and upper income shoppers).

Figure 4 - Fruits and Vegetables in Metro

These same consumers are willing to pay a premium for imported foreign fruit and vegetable packages, many of which are branded (See Figure 5). These include items such as Dole pineapple from the Philippines, baby cut carrots from California, baby corn, and specialty peppers.

Figure 5 – Imported Fruits and Vegetables in Supermarket in Lahore

According to Metro produce managers, the modern supermarket in Pakistan is sourcing less than five percent of its fruits and vegetables directly from farmers. Most of the produce is sourced from local wholesale markets, although the supermarkets do establish relationships with particular, trusted wholesalers. However, they are very interested in sourcing product directly from farmers whenever possible. Quality, volume, and price are always the central issues in sourcing decisions. Metro has set up a program aimed at small farmers, lowering the minimum volumes required to sell to Metro and decreasing the payment time for farmers.

Imtiaz, a locally-owned supermarket chain in Karachi, places an emphasis on their produce sector, which is large and stocked with many local vegetables and fruits. They have established collection centers for farmers around Karachi, so that they can have their agents buy directly from farmers. Imtiaz provides reusable plastic crates at the collection centers to improve quality and lower the amount of tomatoes lost during transportation (See Figure 6). In addition, Imtiaz maintains cold storage facilities in rural areas to be able to collect and store truckloads of produce from small farmers. This is precisely the kind of targeted, well-managed cold storage that is needed in Pakistan and will be of help to small farmers seeking to sell to larger markets.

Lack of cold storage in the marketing system is a major problem for Pakistan, given the large amount of produce that is spoiled every year, estimated between 30 and 40% of total production. The State Bank of Pakistan has a special line of credit (lending to banks at 5%) that should allow banks to lend money at lowered rates to encourage building and managing cold storage facilities. Metro expressed interest in collaborating with donors to build more cold storage, working with Star Farms, a local joint venture with Metro Germany. Imtiaz has already put into place a cold storage program.

Figure 6 - Tomatoes Transported in Plastic Bins and Displayed in Stainless Bins

Imtiaz has also taken the lead in developing store brands for products that are locally sourced. For example, in Figure 7, we see Imtiaz store brands for locally grown rice, chilies, and lentils.

Figure 7 – Store Brands for Domestically Produced Agricultural Products

In Metro stores, we see branded, packaged mushrooms from a local farm featured in the produce section (see Figure 8). Star Farms has also been assisting Metro Pakistan procure produce from a range of farmers.

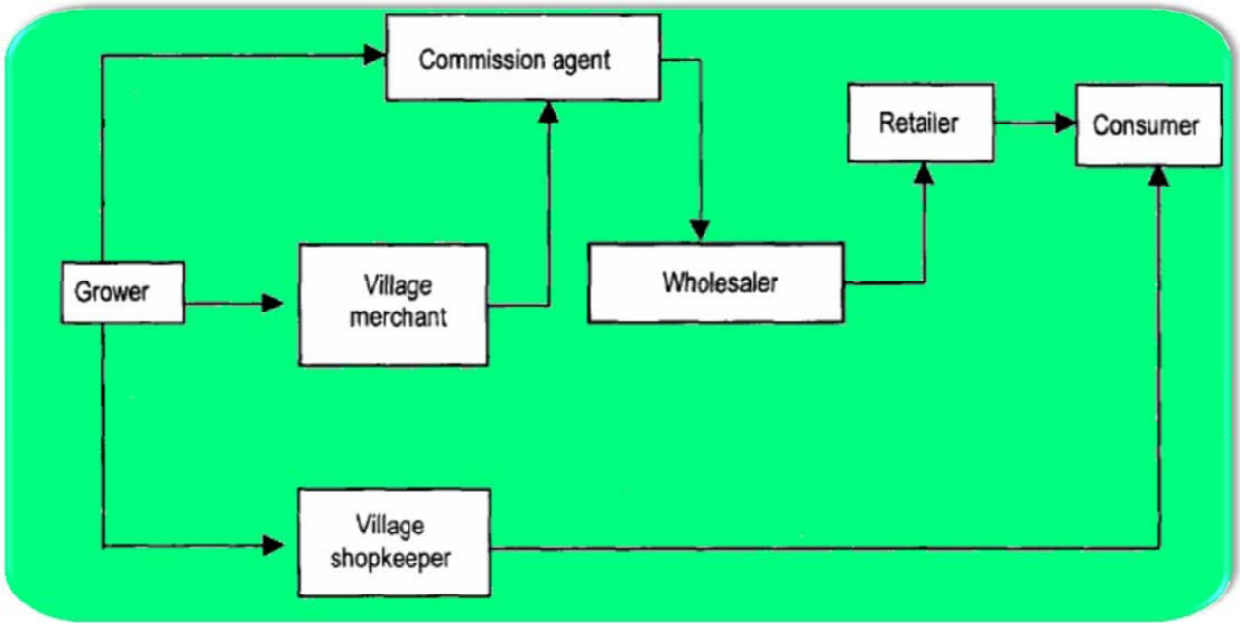
Figure 8 – Branded Local Mushrooms

III. Current Marketing and Branding System

A. The Current Marketing System

TAP has been studying the agricultural product marketing system and various value chains for the last five years and produced many reports about the marketing system. For those who might not be familiar with Pakistan, Annex II contains a summary of the market structure and market issues in Pakistan. We will discuss those issues which are particularly relevant to branding in this section.

Figure 9 - Simplified Marketing Structure of Fruits and Vegetables in Pakistan



Source: Final Report - Pakistan Agriculture Value Chain Assessment, September 2011

Figure 9 shows a simplified view of the marketing system for fruits and vegetables in Pakistan. In this view, the farmer has relatively few options for selling his product: 1) Commission Agent; 2) Village Merchant; and 3) Village Shopkeeper. The farmer sells most often to the commission agent, who is also a major source of credit for the small farmer. With few other sources of credit, the farmer may take production credit from the middleman, which will be repaid, usually at very high interest rates, when the farmer brings his produce to the local market for sale to the middleman. The farmer may also have pre-sold his harvest to the middleman, who then takes responsibility for harvesting the crop and selling it.

The middleman plays a very important role in the marketing system. Buying and selling fresh produce is risky and requires knowledge of many players in the market. Finding labor to harvest fields again requires many contacts and the ability to pay harvest labor before selling the produce. Setting a price to offer the farmer is risky and requires knowledge of the market and price risk. Extending credit to small farmers requires capital, knowledge of the creditworthiness of the farmers borrowing money, and the ability to absorb risks and non-payment by farmers. On the other hand, commission agents are often in a quasi-monopoly position and are able to extract rent from farmers who have no other choice but to borrow from these agents.

From a branding point of view, an agricultural marketing system based on the middlemen does not encourage quality or consistency. The following points indicate ways in which the traditional marketing system has little incentive for quality production:

- When middlemen pre-purchase and pay for the harvest of entire fields, this does not encourage the farmer to produce quality produce since the farmer receives the same price regardless of the quality of the harvested product.

- Produce brought to market by the farmer in sub-standard packaging such as large bags of undifferentiated produce is both wasteful (in terms of increased post-harvest losses) and the potential for damage to the produce does not preserve or reward quality.

- Post-harvest losses encourage the underpayment of farmers because someone has to absorb the losses, and farmers are the most vulnerable market actors.

- Grades and standards exist in the minds of middlemen, who can manipulate the grading system to their advantage and to the disadvantage of growers. Grades and standards defined by the trade in partnership with government, and enforced within the commercial system would reduce waste and increase profits for farmers.

- Many growers have no other choice but to obtain production credit from middlemen, which is both expensive for the farmer and wasteful for the country. Agribusinesses and banks need to find more ways of extending credit to farmers directly.

- There is little incentive for middlemen to invest in cold storage, which is very much needed in the system to reduce post-harvest losses. However, cold storage for undifferentiated produce may not be profitable. Cold storage is profitable for premium products in a well-managed cold storage facility with a high level of throughput.

- Lack of credit in the system and lack of cold storage combine to make it difficult to shift the sale of produce from low price periods to higher price periods in the marketing year.

- Lack of credit in the system makes it difficult for farmers to invest in planting new varieties of fruit or new improved seeds that extend the marketing season.

- The setting of prices does little to regulate prices and less to encourage quality production. The marketing committee system should gradually be replaced by a system of grades and standards, enforced in a commercial framework of regulation.

Branding is most simply defined as a promise of quality and consistency. But the marketing system based on middlemen does not encourage quality and therefore makes it difficult to increase sales and profitability through branding. The marketing system needs to become more quality conscious by establishing formal grades and standards; increasing market options for farmers; injecting more credit from the formal sector into the system; increasing the cold storage in the system; and improving the quality and variety of agricultural products. Then farmers may take advantage of branding and trade promotion, using the packaging and promotion options available.

Figure 10 suggests some of the ways in which farmers may begin to increase their options for making sales:

1) Working though commission agents will continue to be the major mechanism for credit and marketing for some years in the future.

2) Sales to village merchants and village shopkeepers will continue to be important, given that they supply stores in rural areas that will largely remain untouched by urban retailers for some years.

3) Collection centers will be set up by modern supermarkets and urban food companies in order to encourage the purchase of quality produce and to shorten the value chain and reduce costs in the marketing system. Middlemen may serve a role in the collection center system because they have extensive knowledge of the marketing system.

4) Collection centers may work with farmers to use improved harvesting, better packaging, and better post-harvest practices.

5) Collection centers may be able to define grades and standards, or be able to enforce grades and standards that have been defined by the Ministry of Agriculture or other governmental agency.

6) Improved cold storage facilities may also be built in connection with the collection centers of the modern supermarkets and food companies. Their private, profit-oriented management of the cold storage will improve the efficiency of the cold storage operations.

7) Farmers and farmer associations should work to develop direct marketing channels with modern supermarkets and food companies. They may also be able to develop direct relationships with buyers in restaurants, food service, and other urban institutions. While not well-developed in Pakistan, there may also be opportunities to market organic produce at organic farmers markets or to other outlets selling organic food.

8) Grower/Packer/Shippers are generally large farming operations that grow, pack, and ship to market their own produce, shipped in modern packaging that has their own brand or promotion label on the box.

9) These organizations will often purchase product from nearby small farmers who are able to produce to a standard defined by the grower/packer/shipper. The organization may also provide technical assistance to the small growers to assure that production protocols are followed and that all agro-chemical regulations are followed.

The grower/packer/shipper may also provide in-kind credit to small growers for fertilizers and agro-chemicals, and deduct those expenses directly from the small farmers when they bring in their product. They may also work with banks in a triangular credit program where banks provide inputs to small farmers, and receive direct payment from the grower/ shipper/packer.

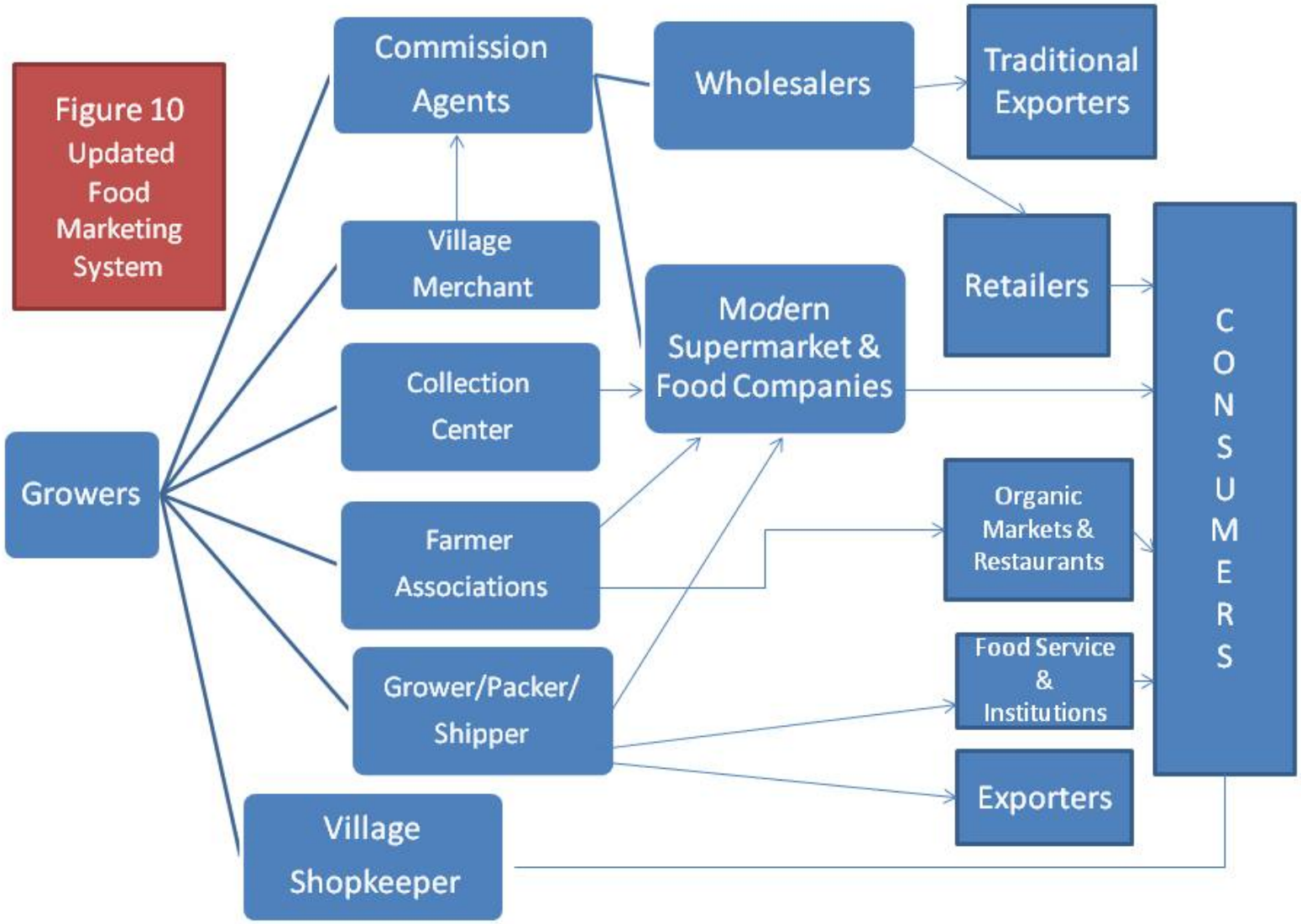


Figure 10
Updated
Food
Marketing
System
Commission
Agents
Wholesalers
Traditional
Exporters
Village
Merchant
Retailers
Modern
Supermarket &
Food Companies
Collection
Center
Growers
Farmer
Associations
Organic
Markets &
Restaurants
Food Service
&
Institutions
Grower/Packer/
Shipper
Exporters
Village
Shopkeeper
CONSUMERS

B. Branding and Trade Promotion

The TAP project has been working with different value chains to improve the quality of production, extend the marketing season of different crops, cultivate better varieties, use improved packaging, and follow better post-harvest practices. For example, the High Value Off-Season (HVOS) vegetables value chain has been partnering with farmers to grow improved varieties of vegetables of high quality. They are grown in short, medium, and tall tunnels that allow farmers to grow and market vegetables in the off-season when vegetable prices are high.

Figure 11 - Tall Tunnel Technology for HVOS Vegetables

Some of the HVOS vegetable growers were growing high quality vegetables but then marketing them in sacks to the local market and its middlemen. This defeats the purpose of growing high quality vegetables. A university project exporting high-quality tomatoes to Dubai created an example of the kind of boxes that can be produced in Pakistan now and can be cost effective if the market will pay a sufficient premium for the higher quality ensured by such packing.

Figure 12- High Quality Boxes for the Export of Vegetables

One grower of HVOS vegetables stated that he packaged vegetables according to the prices in the market: cardboard boxes when prices were high; wooden crates when prices were declining; and polyethylene bags when the market is at the bottom. This is certainly appropriate if you are selling into the local or regional markets. But if you have a contract with buyers who are willing to pay the price of good packaging, like a supermarket, then it may be worth it to continue to use the best packaging available throughout the growing year.

Though it may not be feasible for a small farmer to print up a minimum order of boxes, buying generic boxes and adding your label to it offers an alternative, less costly option. Or you can paint or stencil a label onto a cardboard or wooden box (see Figure 13 – top left). Another method is to put your product into a generic box and then add a sticker to the produce (see Figure 13 – top right). Traders may print up boxes as trade promotion oriented to other traders, rather than consumers (see Figure 13 – Bottom). Most of the small producers of high quality produce would use such types of trade promotion as their "branding" strategy.

Figure 13 – Inexpensive Trade Promotion

Banana Production, Grading, and Packaging

The banana value chain in southern Sindh has been hard at work improving the quality and productivity of the bananas grown. New varieties have been introduced and improved cultural practices have increased both the yield and quality of bananas.

Marketing, however, has been a different story. The banana bunches are cut and brought to a central location. Then, they are often loaded into 10 ton trucks without any packaging or protection. During transport, the bananas are bruised and sometimes damaged, reducing the value of the truckload of bananas. This transport practice is not unusual for bananas in Pakistan. Most of the bananas in Pakistan are transported this way, and most bananas sold are bruised. Though the bananas have an excellent taste and are appreciated by consumers in Pakistan, Afghanistan, Iran, and even the central Asian republics, the tendency towards bruising in Pakistani bananas undermines their appeal abroad.

However, over the next few months, equipment for three inexpensive washing and packing sheds is being imported and set up by growers who will be able to benefit from the use of the equipment. They will wash, grade, bag, and box bananas, creating new high value opportunities for export markets and domestic sales. These bananas will meet international quality standards.

Post-Harvest Improvement in Chilies, Buying Centers, and Improved Credit

TAP has been working to improve the quality of red chilies. Traditionally, dried on the ground in the Kundri area, red chilies were of low quality and high aflatoxin levels. The quality became so bad that international shipments of the product were banned.

To lower the aflatoxin levels, it was necessary to dry the chilies above the ground on special porous tarps that allowed air to circulate and that could be covered at night to reduce the moisture caused by damp night air. Some farmers have even built special wooden structures to keep the tarps of the ground. Other farmers placed the tarps on a series of bricks, which was a lower cost solution and managed to keep air circulating through the chilies.

This post-harvest improvement helped to lower the aflatoxin level to internationally acceptable levels (except for Japan which required a zero aflatoxin level), restarting international shipments and improved the price of the product.

National Foods, a major Pakistani food company that uses large amounts of chilies in its products, set up laboratory to test the chilies at a product collection center. The chilies were tested there and purchased immediately, avoiding the costs of unacceptable chilies being transported to urban site and then possibly being rejected. The collection center allowed National Foods to pay a premium on the usual price for acceptable chilies because the value chain had been shortened and expenses lowered.

In addition, the presence of National Foods ended up attracting Habib Bank, a major Pakistani bank, to lend money to at least some of the farmers in this cluster.

This project has elements of the modern marketing system needed in Pakistan: quality production, grades and standards, a reduction of the role of middlemen, quality testing, and access to agricultural credit. Finally, National Foods expressed interest in creating a geographically specific brand because the chilies of Kundri had a distinctive taste and was well known for its chilies.

Improved Method of Drying Chilies on Special Tarps

A Potential Grower/Packer/Shipper of Grapes

Chakwal Vineyards, between Islamabad and Lahore, is an example of a farm that could become a grower/packer/shipper of quality grapes. Owned by the Izhar Group, a prominent business entity, the farm has 550 acres of land, with 300 acres planted in grapes and additional acres plants in olives. The grapes are trellised and the vineyard is in production.

The farm has a basic infrastructure (pack house) and electricity, and they plan to build a cold storage facility. They have begun to pack and ship grapes, although they did not have a label for their boxes. They plan to have labeled boxes for next's year grape harvest.

The company tried to sell to Metro this last year, but they appeared to have a difficult time getting through Metro's procurement requirements. They hope to better understand Metro's requirements for quality standards, which was apparently unclear last year. They will continue to work with Metro to place high quality grapes in Metro stores, possibly working with Metro's procurement partner, Star Farms.

Chakwal Vineyards has also been working with local farmers to plant desirable varieties of grapes that will ripen at different time to help extend the harvesting and marketing season. Most grapes are harvested in May/June, before the monsoon rains.

Chakwal is building its packing shed and cold storage facilities so that they can accommodate the grapes of the local farmers. These grapes would have to meet the quality standards specified by Chakwal and then be marketed under their label.

C. State Bank Interventions in the Agricultural Marketing System

The State Bank of Pakistan (SBP) is of course very aware of the credit needs of the agricultural sector in Pakistan. Bank officials estimated the agricultural system could absorb one trillion rupees of credit each year, but only received some 400 million rupees last year. They have increased the credit targets to the agricultural sector this year up to 500 million rupees, and plan to continue to increase the level of credit available to the sector in coming years.

The SBP is introducing a number of innovative programs to help add credit to the agricultural sector. One is a warehouse receipts program that will allow growers to get cash for commodities that are being stored in warehouses participating in the program. The program will be rolled out over the next few months. Details can be found at the SBP website, as follows:

http://www.sbp.org.pk/acd/Guidelines/2014/Draft-Frmwork-Warehouse-Receipt-Financing.pdf

The SBP has opened a special credit window for financing cold storage facilities. Banks received funds at 5% and are able to on-lend these funds at a lower than normal rate, which should encourage the construction of these facilities.

The SBP has been working with banks to improve and increase their value chain lending and tripartite agreements, working with banks such as Engro and Zarai Taraqiati Bank Limited (formerly known as the Agricultural Development Bank of Pakistan).

Crop insurance and post-harvest/logistics insurance is being developed to help mitigate some of the risks in growing and marketing crops. Guidelines for long-term horticultural lending (for the development of orchards and vineyards, for example) have been issued by the SBP.

In addition, the SBP has issues guidelines for contract farming and lending by agribusinesses to farmers.

The SBP has also developed a Market Development Initiative for banks that lend to small farmers. In addition, they have developed training programs for Pakistani banks to lend to the agricultural sector.

Many of these are needed programs that will encourage the modernization of the agricultural sector and allow more credit to flow into agriculture. Agribusiness development projects in Pakistan should be aware of the programs offered the SBP, and in some cases, these projects may wish to collaborate with the SBP in the implementation of these programs.

IV. Branding and Promotion Recommendations for Selected Value Chains

A. High Value Off Season Vegetables

This sector has been able to roll out a reasonable number of high tunnels in which to grow off-season vegetables. Much emphasis has been placed on production of high quality vegetables. There has been less emphasis on packaging, marketing, and association building.

Association building for marketing is an important element of the marketing strategy. The value chain leaders should work with farmers to determine who would like to be in a marketing association (close proximity helps) together in order to be able to estimate volumes and how much packaging to order.

If the marketing association is cohesive, marketing materials and packaging materials could be ordered using a common label (using the branding questions to think about the label). Determining a common standard for product would be useful if farmers are able to agree. (See Annex IV of this report for an example of standards for tomatoes. Other standards, at least for USDA, are available on the Internet). **However, the ability of the farmers to create a viable marketing association must be determined rather rapidly, since the season is beginning in the early part of the year.**

If the farmers are unable to form a cohesive group, then the project should focus on **packaging for individual participants** in the program. Working with individual farmers, the project should estimate how many boxes might be required by each participant.

Generally, the boxes would be used mainly for the top quality vegetables. One grower working with tall tunnels suggested that the 60-80% of the produce coming out of these tunnels would be top quality.

Then, the project could order a quantity of generic boxes upon which a label can be placed for each individual operation. The project could use its own printers and graphic resources to help the farmers design labels. A cost sharing arrangement should be worked out with the farmers.

Another action that could be taken by the farmers would be to put stickers on their vegetables. All of the produce should be sorted and graded into different qualities.

Farmer associations and individual farmers should begin immediately to identify potential customers for their high quality produce – restaurants, institutions, food service, and local retailers. The farmers should avoid selling their produce in the local market to commission agents, unless they are associated with supermarkets that give a premium for high quality product.

B. Grapes

The grape operation at Chakwal has the ability to become a grower/packer/shipper, with a packing shed, quality packaging with its own brand, cold storage, and marketing operation, sourcing from both its own grapes and grapes grow by nearby farmers.

While the packing shed has been established, the cold storage has yet to be built. ASF may be able to assist Izhar Group obtain a low cost loan from a bank under the program established by the State Bank of Pakistan.

Star Farms, which is a GLOBAL G.A.P certifier and a procurement agent for Metro, should be able to help Chakwal understand the procurement requirements of Metro and other supermarkets, including packaging and quality requirements.

Chakwal needs to determine what branding materials they are going to use, including the logo for boxes, stickers, and information that will be placed on the Internet.

Once Chakwal understands the quality requirements of supermarkets, it can communicate those requirements to local growers who supply grapes to the operation. Chakwal may want to hire an extension agent to work with local growers to assure that they are following best farming practices, applying agro-chemicals properly, and harvesting their grapes at the desired time.

Chakwal may also want to explore value chain or tripartite financing, in order to be able to assist local farmers in their financing needs and assure that all the right inputs are acquired and utilized by the local farmers.

Chakwal should also enquire to see if crop insurance or logistics insurance is available to help mitigate the marketing risks.

C. Bananas

A major activity is to get the banana grading and packing sheds successfully imported, installed, and operating. This will consume considerable time and energy. The goal is to wash and pack into cardboard boxes to an international standard. It will take some time to get the washing/packing lines operating efficiently.

There has been much talk about establishing an association of banana growers, although this has not yet happened. Some effort should be put into establishing this association, but if it is not happening, it is more important to put energy into establishing the washing/grading stations.

If there is an association, they can consider jointly establishing a label that can be printed or added to an international standard box. If there is no association, generic boxes may have to be used, with a label added to the box or stickers added to the fruit.

Banana farmers should jointly or individually undertake marketing activities, both domestically and internationally. The harvested banana, once safely packed in strong boxes, will be attractive to supermarkets, as well as to buyers in Afghanistan, Iran, and the Central Asian republics. Banana growers should consider attending trade fairs in relevant markets to find new customers and determine how viable these markets are from a price point of view.

In addition, more of the growers should consider obtaining a GLOBAL G.A.P certificate for their farms. It helps in the international marketing of Pakistani bananas.

D. Chilies

The demand for chilies that meet international standards for aflatoxins is larger than the current supply. This is an excellent opportunity to grow and market chilies, as long as they are dried on the project-suggested netting and meet international standards. National Foods said that they bought 100 MT of chilies last year, but would have purchased four times that amount. And this does not count the other companies who are buying or want to buy chilies.

There needs to be efforts to increase the production of chilies and following the proper post-harvest practices to lower aflatoxins. This will take more agricultural credit and additional drying stations.

There is a growers association that could help to attract more resources to these farmers. One idea would to establish study tours for spice processors and companies, for example to Turkey, where they produce chilies and have some of the same aflatoxin problems. Another idea is to work with National Foods to establish a geographically-based brand, although this would presumably allow National Foods to capture the higher prices for Kundri's red chilies.

Perhaps a more interesting idea would be to work with the growers association to establish a protected geographical indication (GPI) for the European Union. Hungary has already done this for its paprika, so there is some precedent.

It would take considerable work to gather the information necessary to apply for a GPI. Working with the farmers association, the project would need to show why this geographic area has:

1. Unique product different from others
2. Product considered the best in its class
3. Highly specific product
4. Product with a tradition and a history

Furthermore, traceability back to the fields would have to be proven (and perhaps established), along with a description of the system of production and why it is different from other places.

All of this information would have to be compiled by the project in Pakistan. Then, it would be prudent to work with consultants in Europe who have experience and knowledge in putting together the application for the European Union.

There is relatively little time to undertake this activity, and a decision to move ahead with this should take place by early January.

E. Recommendations for Future Projects

There is always more to do when working on improving the agricultural sector. The value chain approach followed by the AFS has yield many positive results. The following are suggestions for some possible activities and directions for future USAID projects:

- Pick some minor value chains, but also pick some major value chains such as rice, dairy, wheat, cotton, sugar cane, onions, or maize.

- Work with supermarkets (domestics and foreign), food companies, and other agribusinesses on cold storage, sourcing, collection centers, contract farming, and grades and standards.

- Engage the producers, merchants, and the Government of Pakistan to create a commercially-oriented, enforceable system of grades and standards for agricultural commodities sold domestically and internationally.

- Partner with the State Bank of Pakistan and other financial institutions on the implementation of credit programs designed to assist the agricultural sector including crop insurance, logistics or post-harvest insurance, value chain lending, warehouse receipts, cold storage construction lending, contract farming, and the SBP's market development initiative.

- Work on improving post-harvest practices in Pakistan and the country's cold chain. This should be done with commercial warehouse operators, supermarket chains, grower/packer/shippers, financial institutions, and substantial farmers associations and cooperatives. The United States has had an aggressive cold chain program going in India in recent years, implemented with the help of USTDA and the US Commercial Service. The United States has a lot of competitive cold chain equipment and construction knowledge that can be sourced on a largely commercial basis. There are also a number of post-harvest institutes and organizations in the United States that can provide training and train the trainer programs in improved post harvest practices.

- Continue to encourage the formation of farmers marketing association to help farmers diversify their market outlets. Help these farmers work with supermarket chains, food service institutions, restaurants, and exporters to provide quality produce and increase their market share with these groups.

- Support export promotion and trade promotion for farmers associations and exporters, including support for trade shows and other study tours.

- Provide training programs for Pakistani students and professionals to do advanced degrees the United States.

Annex I

Branding Power Point

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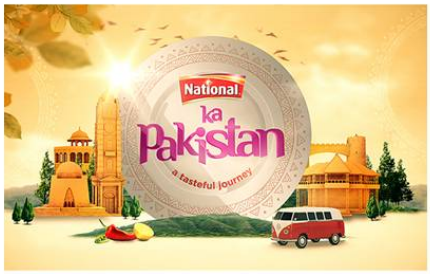
There Are Many Brands in Pakistan



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Store Brands

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National and Export Brands

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Branding of Unique Product

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What Are Brands??

- Brands are a promise to the consumer! The product will be the same each time purchased!
- It personalizes the product to a target audience
- Quality Control is a must

- But quality is not the only consideration- For example, does Rolex keep better time than a Timex?
- Consumer perception is everything
- Brands make selling easier

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Branding and Marketing

- Branding and Marketing are not the same
- Marketing Components:

  - Product
  - Price
  - Place---the logistics of getting it to the buyer
  - Promotion

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Branding as Part of Marketing Plan

➔ **Branding - an important part Marketing Plan**

- Your major communication with the customer
- The brand represents the company, the mission, the staff,
- False promises do not work….waste of time to brand
- Makes you unique….not a commodity.
- Asset value is created with a successful brand

➔ **Branding Essential Ingredients**:

- Product differentiation, relevance, esteem and knowledge
- But the key is product "consistency"

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Key questions when thinking about developing a brand?

1. In a sentence, how would you describe the business?
2. How would you describe the product?
3. What is the one reason to buy from your business?
4. When a customer is buying a product from you, what three other companies or brands would he also consider as a supplier?
5. What is one reason why a customer will buy from you?
6. How well is your company known in the marketplace?
7. Does your product get lost in the Value Chain?
8. Can you differentiate your product?
9. If you were to compare your product to say, a car, what brand would it be?

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Are you ready to brand? Who buys your products

- ➔ You are ready when you can make a promise to your customers of providing the same quality and service on every order….for the next 5 years.
- ➔ What can you do better than any other supplier?
- ➔ Defining who buys your products and …Why?
- ➔ Defining your market niche.

Rafhan

- Research your market.
- Define a customer profile (location, type of business (importer, supermarket, Restaurant, etc.)`

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Introducing your brand

- ➔ Organize a brand launch
- ➔ Decide on the target audience you want to reach via various media
- ➔ Target media outlets by researching the selecting publications
- ➔ Utilize electronic media

- ➔ Determine free sources of publicity….various websites
- ➔ Distribute your news…daily or monthly

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Budgeting for a Brand Development

- This is a important issue.
- **Key costs include:**
  - Market Research
  - Name Development
  - Logo Development
  - Development of support materials such as web site, printed material, brochures, attend food shows, etc.
  - Advertising
  - Signage, packaging, etc.

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Other Branding Issues for Associations

- Very difficult to make branding work for a large group of producers….as there is little cooperation.
- Difficult to make branding work with producer group if the standards are not prescribed by law, and followed.
- Branding can work with several leading producers and exporters…with the idea that it will pave the way for others to follow….once they see the benefit.

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Mark of Certification

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Marketing Orders

Milk Marketing Orders -- Federal Milk Marketing Orders are used to stabilize conditions for fluid milk -- to make the buying and selling of fluid Milk an orderly process upon which dairy farmers, milk dealers and consumers alike can depend

Fruit and Vegetable Marketing Orders -- These marketing orders help fruit and vegetable growers work together to solve marketing problems that they cannot solve individually. They help balance the availability of quality product with the need for adequate returns to producers and the demands of consumers.

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Generic Publicity – White Gold Cambodian Jasmine Rice

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How Soon Will the Internet Play a Part

Annex II

Fruit and Vegetable Marketing System in Pakistan

Citations from the Final Report - Pakistan Agriculture Value Chain Assessment

September 2011

Marketing Channels:
Agricultural marketing channels refer to the outlets or routes through which commodities reach the final consumer. The existing vegetable marketing channels links (in that order) are producer, commission agent, wholesaler, and retailer. Most of the vegetable areas in Pakistan are concentrated in specialized districts in peri-urban areas of big urban centers like Lahore, Karachi, and Peshawar. Village sales are important only for the relatively less perishable vegetables, such as onions and pumpkins. After production, vegetables generally pass through three stages (commission agents, wholesalers, retailers) before reaching consumers.

Commission agents sell for a commission, while wholesalers sell through open auction to retailers in small lots. Vegetables are also sold to pre-harvest contractors who buy standing fields and harvest and market the produce themselves. Considerable regional variation exists in the proportion sold to different agencies and the ensuing marketing margins for the same vegetable. This variation depends upon the proximity of regulated markets, availability of institutional marketing and credit agencies, status of road links with markets, transportation facilities, and the general attitude of the farmers.

Agricultural marketing channels deal with the "marketable" or "marketed" surplus of farm commodities that enter the process of circulation and exchange. The purpose of exchange of commodities for money and vice versa is to have access to a variety of products. Agricultural marketing channels refer to the outlets or routes through which commodities pass to reach final consumers.

Handling of Fruits and Vegetables
Handling operations start soon after picking and continue up to packing. These operations are carried out immediately after picking. It is a good practice to start these operations as soon as possible rather than keeping the produce for long hours; since this allows a longer period for marketing, and subsequent retailing, and enables the consumer to buy better quality product. Handling of fruits and vegetables is a labor intensive operation. About 20 to 22 laborers are needed for handling one truckload. Handling includes collection of produce after picking, transportation from field to packing floor, cleaning, clipping the stem portion attached to fruits and vegetables, spreading for subsequent grading, assembly of crates, packing, trade marking and loading of truck.

Grading:
Grading of fruits and vegetables is an important operation which helps in getting better returns for the people involved in this trade. Grading is done before packing the products in crates. The contractors designate three to four experienced laborers for grading. Usually, three grades are made: Special, 'A' and 'B'. For Special grade, top quality fruits and vegetables are selected and packed separately. Exporters for export purposes normally buy this quality of fruits and vegetables. The other two grades 'A' and 'B' are usually sold in the open auction in the wholesale and terminal markets, and supplied in the inter-regional markets for sale. It is important to note that whenever ungraded produce of any variety is presented for sale, it cannot achieve a higher price than grade 'B' product.

Grading and standards is the single most important segment in marketing which requires the highest attention in Pakistan. There are substantial rules and regulations related to grading and slandered in Pakistan but unfortunately these are not followed and practiced. Recently, a number of companies and big shops like Zenith, Metro, Makro, Agha's, etc. have started differentiating products with respect to grades and standards in fruit, vegetables, meat and poultry products. The trend is being followed by number of other big shops

and superstores. Graded products usually fetch substantially higher prices. Even in fruit markets, high graded small two to five kg paper carton/packages are available containing fruits which fetch higher prices. In superstores, imported fruits are available even in plastic baskets which are attractive and fetch higher prices. The trend is encouraging but is being practiced at a very limited scale. There is a need of awareness and strict following of rules and regulations.

Packing

Careful packing of fruits and vegetables is necessary to keep the produce in place with minimum shaking. The fruits and vegetables are normally packed in layers in crates. In each layer, products are packed alternately placing the beak of one in between the shoulders of two. This method of packing is easy to follow and quick. It also provides enough room to each piece of fruit without compressing it. At present, most fruit and vegetables are packed in traditional wooden crates. The average weight per crate of is about 14 to 15 kg, but the number of fruits and vegetables per crate varies by grade and from variety to variety. The demand for wooden crates normally increases during the harvesting of major fruits and vegetables like mangoes, citrus and tomato. The contractor normally arranges packing material (crates and paper) three to four months before the harvesting season. Thus, they usually buy at lower prices as compared to those buying during peak harvesting. Used newspapers are the main source of paper used for inside packing for fruits and vegetables.

The packing industry of Pakistan has progressed considerably over the past few years, particularly since the relaxation of import duty on fiberboard, which is used packing to internationally acceptable standards. The packing industry in Pakistan is capable of producing material for this standard but, unfortunately, the majority of exporters continue to purchase the cheapest forms of packing, resulting in higher spoilage losses and poor reputation in international markets. For the Gulf market, wooden crates are still extensively used and little regard is given to importers' preferences.

Storage

Fresh fruits and vegetables are living tissues, although they are no longer attached to the plant. They breathe, just as humans do, and their composition and physiology continue to change after harvest. They continue to ripen and finally, they begin to die. Cellular breakdown and death (senescence) are inevitable, but can be slowed down with optimal storage conditions. Fresh fruits and vegetables need low temperatures (32 to 55F) and high relative humidity (80 to 95 percent) to decrease respiration and to ensure that quality is maintained. Once a crop is harvested, it is almost impossible to improve its quality. In Pakistan, loss of horticultural crops due to improper storage and handling can be as high as 40 percent. Proper storage conditions (temperature and humidity) are needed to lengthen the storage life and maintain quality once the crop has been cooled to the optimum storage temperature. There are many cold stores constructed at wholesale markets to store local and imported produce.

Storage of many domestically produced perishable crops is usually inconsistent with marketing practices, which involve daily selling of fresh produce on consignment. Traders are rarely prepared to tie up funds in stored produce unless there is a clear opportunity to increase their income. Relatively few crops are suitable for long-term storage. These include potatoes, carrots, onions, apple and citrus. Only that part of the harvest required to satisfy future demand should be stored. If too much of the harvest is stored and subsequently released on the market, prices received may not cover the initial investment, maintenances and fuel costs, but also because their seasonal use means that average capacity utilization is often low.

Cold stores are present in almost all big cities mainly for fruits. Some CA stores (Controlled Atmosphere) are also recently developed and mainly fruits are kept there to fetch higher prices during the off season. There are special stores only used for potato mainly in potato growing areas.

Processing

Profitable processing industries cannot be based on the occasional supply of raw material when the fresh market is glutted. Horticultural processing requires expensive investment in machinery; therefore, idle time

at a factory must be minimized and this cannot be achieved if produce supply is seasonal. Moreover, a factory must have a guaranteed supply of raw material at a competitive price. This is difficult to achieve; farmers who demand processing facilities when prices are low will be the first to sell their produce in the fresh market if prices rise, even if they have a contract with the factory. No factory should be established unless the demand for the processed product is clearly identified and that product can be sold profitability. Market assessment is usually, and unfortunately, the least thoroughly elaborated element of a feasibility study.

Transportation

Fruits and vegetables crates are mainly loaded on trucks to transport to inter-regional wholesale markets by road. Although, the rail network is quite extensively spread throughout the country, but it is not reliable and most fruit and vegetables are transported by road to the consumption centers. Air transport is exclusively used for export purposes. As per the contractors, during transport, losses of fruits and vegetables may range from 0.5 to 1.0 percent due to heat burns, bruising and microbial spoilage. Losses during transport are minimal when packing starts soon after harvesting and fruit reaches the markets before becoming fully ripe.

Types of Markets

Markets in Small Towns

In small towns, assembly markets are situated near farm gates; where marketable surplus is brought in by farmers. Traders, shopkeepers and retailers participate as buyers in these markets. Most transactions involve small quantities. Traders operating in these markets are not approved by any government agency, in some cases; town committees charge an entry fee. Traders do not maintain records of transactions. Pricing is based on negotiations between trader and farmer.

Assembly Markets

In an assembly market, the agents perform work on commission by charging 10 percent on sale revenue from sellers. They do not provide lodging, boarding, transport, telephone and entertainment facilities. Usually, they maintain contact with the commission agents in wholesale and terminal markets and receive price information from agents in various wholesale markets. On receiving a demand from a wholesale or terminal market, they arrange that quantity from the agents for supply.

Wholesale Markets

For large quantities, farmers prefer wholesale markets and compare prices before selling their produce. Better transport facilities and availability of large quantities of marketable surplus have made it feasible for farmers to take their produce to wholesale markets. Wholesale markets located in a district town or a major subdivision town such as Hyderabad and Lahore are the main centers for vegetable surplus of surrounding areas. These have better storage, transportation, communication and working conditions for both buyer and seller. Traders have permanent offices and auction floors for transactions in these markets. Commission agents also provide lodging and boarding facilities to contractors and producers. Members of market committees monitor trading activities in these markets. Traders are required to keep records of their transactions and report to their respective committees. Commission agents, wholesalers, retailers, shopkeepers and weighing men are also registered and licensed by these committees.

Wholesale Markets Role and Functioning

Wholesaling facilitates the economic function of buying and selling (usually termed as "price formation") by allowing the forces of supply and demand to converge to establish a single price for a commodity. The wholesaler may also perform storage and warehousing functions, as well as allowing economies of scale to be obtained in the transportation of produce from farm to market. In agricultural markets, several agencies operate at various stages. The major agencies involved in trade are assemblers, wholesalers, inter-zonal traders and retailers. Apart from these, other agencies, which provide services to producers, are brokers, commission agents and transporters. The people involved in wholesaling can act simply as merchants who are involved in buying and selling of produce; or can be brokers who deal in orders rather than goods, or can be commission agents. Prices are normally established through negotiation or auction system. The auction is compulsory in all wholesale markets in big cities which are supervised by representative of Directorate of

Agricultural (Economics and Marketing) of Department of Agriculture by the respective Provinces. Wholesaler deals in all fruits and vegetables in the inter-regional markets and expands his business by selling large quantities of farm produce. He maintains contact with the wholesale and terminal markets; selling the produce not only to terminal markets, but also to agriculture process industry, exporter and retailers. He keeps in touch with the commission agents and retailers of the local areas. He buys products from the commission agent on credit and returns the same after selling the product. The cost includes transportation of produce from the auction floor to shop, rent and license fees.

Most of the marketable surplus is ultimately routed through 'Terminal Market'. Terminal markets are normally located in large urban areas and take the bulk of their produce from rural assembly markets located in production areas, where the transactions are of small scale and usually take place between farmers and traders. The distinction between rural assembly markets and secondary wholesale markets is that secondary wholesale markets are permanent operation (rather than being seasonal in nature or dealing in specialized produce); larger volumes of produce are traded than at the rural assembly markets and specialized functions may be present, such as commission agents and brokers.

Terminal Markets

Terminal wholesale markets are located in major metropolitan areas, where the produce is finally channeled to consumers through trade between wholesalers and retailers, caterers, etc. Produce may also be assembled for export. Terminal markets also supply products to other parts of the country. For example, Karachi and Lahore markets serves as a distribution centre to the Sindh, Punjab, Khyber Pakhtunkhwa provinces. The problems of terminal wholesale markets are usually ones of congestion caused by an unsuitable location or by an inappropriate mixture of wholesale and retail functions. Traditionally, wholesale markets were built adjacent to city centers, located at a focal point of the intercity transport facilities and close to the main retailing areas. Population growth, changes in urban land-use patterns and the development of modern transport systems have all influenced the suitability and functionality of existing sites.

The commission agents, wholesalers and exporters are the major traders of these markets. The traders mostly depend on supplies through contractors and wholesale markets. They have access to modern facilities such as telephone, fax, and internet services in the market premises. Most of commission agents have their own transport (trucking) companies. In Sindh, a terminal market is located at Karachi, where most of vegetables of Hyderabad and Thatta are traded; however, contractors send their vegetables to the terminal markets of Punjab, Khyber Pakhtunkhwa and Balochistan. Lahore, Rawalpindi, Multan, Sialkot, Gujranwala, Peshawar are the big markets of Punjab and Khyber Pakhtunkhwa.

Fruits are traded through centralized marketing systems. In the producing area, assembly markets function which act as the main source to supply fruits to the terminal markets to fulfill the demand of the consumption areas. More than 85% of the fruit products are transported from assembly markets to terminal markets.

Farm Fresh Vegetables:

Vegetables, being highly perishable, lose nutritive value if long time is spent in reaching to consumers through long marketing channels. This is the reason mostly vegetable clusters are found in the areas surrounding urban clusters. Pakistani people traditionally prefer fresh vegetables. In certain cities like Islamabad, there are special schemes for vegetable farms on one side, so fresh vegetables can be supplied to the consumers. People also like to purchase fresh vegetables from roadside temporary shops established by growers near their farms. Government also encourages this by providing space for Sunday and Friday Bazaars, where growers can sell their vegetables directly to consumers. In this way, the consumers get maximum benefit in terms of high nutrients and low price. The grower also gets better price as compared to the one paid by contractor. This should be further encouraged by providing more facilities.

Another trend in vegetable farming and marketing has been introduced by multinational companies doing business in food sector. Some of the vegetable farms are directly managed by the companies and they

process all the production of their own farms while other farms directly sell their produce to processing industry. There is less involvement of middleman in this system. Most of the marketing system is based on direct interaction between grower and the purchaser of the processing industry. Companies like Mitchell's, National, Sundip, Shezan, etc. have such business with growers for purchase of farm fresh vegetables.

Marketing Channel Links

Producers

Vegetable cultivation is carried out by a large number of growers who are geographically dispersed in various locations in Pakistan. Vegetable producer is a primary functionary involved in crop production on his own land or a piece of land obtained on rent. Majority of the producers sell their produce to pre-harvest contractor. There were two main reasons behind the sale to pre harvest contractors. The most important reason is the lack of finance for marketing cost (e.g. purchase of packing materials (sacks), rent of curing places (store), labor charges for supervision of the store during curing, loading and unloading, transportation, etc.). The other reason is that farmers grow other crops soon after harvesting. Therefore, they do not have enough time to manage all those activities and prefer to sell the produce to pre-harvest contractors.

Commission Agents

The Commission Agents act as bridge between sellers and buyers to bring them together. They maintain contact with inter-regional wholesale markets and possess comprehensive and accurate information. They perform their activities on commission basis. They do not accept any title of goods, and simply sell the produce brought by producers and contractors. They have their shops in market equipped with strong communication network.

Wholesalers

Wholesalers buy and sell large quantities of farm products, usually in wholesale and terminal markets. Wholesaler usually deals in all the vegetable and vegetable products in the inter-regional markets and supply produce to processing industries, exporters and retailers according to their demand. A wholesaler is a major agency in marketing of agricultural products, having good contacts with commission agents in wholesale markets and retailers in local markets/area. Wholesalers mostly purchase the product from commission agent on credit and return the same after selling the product.

Retailers

All market activities terminate at the retailer link of the value chain. Retailer buys and sells small quantities of product according to the demand of consumers in the area. Retailers maintain contacts with consumers and make transactions. Retailers have two types of selling; few have their small shops in consumption areas while some others are hawkers.

Financing in Marketing Operations

The Zarai Taraqiati Bank Limited (ZTBL) and commercial banks provide credit to farmers on completion of a number of formalities against acceptable collaterals. In principle, such loans are available to small farmers as well, but in practice ,it is pretty difficult for them to obtain the required loan on time; with the result that small farmers are unable to bring any improvement in their operations and ultimately to enhance incomes. Generally, loan-giving agencies do not advance marketing loans. Thus, the farmers, in particular, the small ones, deal with the commission agents and wholesalers to obtain the marketing as well other input credit from them usually on terms not favorable to the farmers.

The commission agents do not extend short-term loans to growers to enable them to manage their orchards and to buy inputs and packing material in time. Grower's access to institutional credit is limited. Majority of growers obtain loans from non-institutional or informal sources, particularly from traders or commission agents. Traders extend credit mainly in kind (seed, fertilizer and pesticide) and tie growers to sell their output of the crops or market it through their outlets or channels. In this way, they deduct their loan along with commission and margin.

Working capital is dependent upon payment terms offered to customers and received from suppliers. Businesses in meat, fruit, and vegetables operate mostly on the basis of immediate payment from customers; therefore have limited needs for working capital. There are however supplies made to customers for livestock on credit. Generally, they receive less than one month credit from their suppliers. This is mainly because of the perishable nature of goods; since the turnaround time, especially for meat, fruit and vegetables is very short.

The owners are not aware of any SME sector specific efforts made by the Government of Pakistan and or any other agencies or programs. However, some business owners are aware of loan products offered by banks and have availed the facility of loan products for business funding needs. A large number of business owners use banks to meet banking and business needs availing the facility of business banking accounts but the owners are not keen to propose any feature or product to be offered by the bank. The segment at large is unaware and therefore reluctant to use any financing or loan product to meet funding needs. Only 33% of the segment is funded by Banks. Business owners cite high interest rates, high bank charges, tedious documentation and religious reasons for not applying for a loan. In addition to that, it is also observed that other services such as payroll and money transfer are discouraged by the segment whereas the response for cash management and collection services is weak; only 9% business owners are reported to show intent to avail the service. 71% respondents do not pay for any of the proposed insurance products and 88% of them are not interested in availing any insurance product in future (IFC, 2011).

Agriculture Produce Markets Act of 1939

Under Agriculture Produce Markets Act of 1939, a market committee comprising of government officials and representatives of growers, traders and consumers, is established for every notified area. This Committee is responsible for arranging open auctions, supervision of weight and measures and prompt payments, licensing of all traders, allotment of shops or trading floors for new entrants, dissemination of market information and levying of market fees or taxes.

The government levies fees on agricultural produce, 15% of which is retained by the local market committee with the aim to improve physical infrastructure of the market. Collection of fees is contracted out to private agencies that compete in an annual open auction. In reality, political influence and bribes determine the award of the contract. After obtaining contract, money is recovered by charging higher-than-the-government scheduled fee. The fee collecting agencies collude with local police in intimidating traders reluctant to pay such higher rates. Trucks are held at checkpoints resulting in the spoilage of produce.

Growers who transport and market their own produce are officially exempted from the market fees, but in practice, they pay the same as contractors. It is known that a proportion of this revenue is passed on to top hierarchy, while the fee collecting individuals are changed regularly. All traders (growers are exempt) engaged in purchase, storage or sales of agricultural produce in notified market area are required to be licensed by the local market committee. The power to issue, renew and cancel licenses provides means to obtain bribe from traders. This particularly applies to new entrants. The official criteria for obtaining a license are solvency, past experience, competency with no criminal convictions. But, in practice this is determined by a bribe, family and social ties and support from local commission agents association.

Private Sector Role in Wholesale Markets Management

Fruit and vegetable markets, regulated by the respective provincial agricultural departments under the market Committee Acts, pose significant hurdles to development of such markets by the private sector. Despite recent amendments, private sector is still not keen to enter this area and the small number of fruit and vegetable markets continue to impose significant distortions and costs. The Market Acts give too much regulatory authority to the government, allow it to interfere in the day to day functioning of these markets, and give it powers to control governance structures, rentals and allocation of space in the market. Under such restrictive conditions, it is not surprising that private sector has not entered the area in any significant manner. A thorough overhaul of the market Act, with a view to facilitate private sector entry is the need of the day.

Annex III

List of People Contacted in Pakistan

N	Sector	Contact Info	Contact Person	Phone	City	Entity	Designation
1	Vegetables	92-0300-400-7282	Muhammad Ahmad Ramazan	92-042-7708081		Al-Miraj	
2	ASF	0321-8789010	Saad Javed Cheema	042-35743864	Lahore	ASF	
3	Training	3008884944	Waheed Imran	056-3721913-14	Nankana Sahib	Vocational Training Institute	
4	State Bank of Pakistan	021-99221606	Syed Samar Hasnain	021-99221606	Karachi	Development Finance Group	Executive Director
5	State Bank of Pakistan	021-99221867	Yousaf Jamal Malik	021-99221867	Karachi	Development Finance Group	Joint Director
6	State Bank of Pakistan	021-99221241	Kamran Akram Bakhshi	021-99221241	Karachi	Development Finance Group	Additional Director
7	ASF	0344-4475050	Ayesha Gulzar	051-2818305-8	Islamabad	ASF	National Coordinator
8	ASF	3444475206	Shaukat Ali	051-2818305	Islamabad	ASF	Director of Programs
9	ASF	3444475366	Shamsher H.Khan	051-2818305	*Islamabad*	CNFA-ASF	T.A Coordinator
10	ASF	3444475252	Shad Muhammad	051-2818305	*Islamabad*	ASF	Chief of Party
11	Grapes	0345-8493332	Shavir Masrur	042-111-323-111	Lahore	Izhar group of companies	Senior Manager Marketing
12	Bananas & Strawberries	92-0300-8378129	S.Raheel Nasir Shah	021-3588751	Karachi	Agriculture & Fruit Farm	C.O.O
13	Vegetables	0302-8401222	Rana Uzair Nasim	042-36687823-24	Lahore	JDW	Business Development Manager
14	Consultant	3018299953	Kazim Saeed	021-5841590	Karachi	The World Bank	Policy Consultant
15	Ag. Council	3044756683	Arif Nadeem	042-35776810	Lahore	Pakistan Agricultural Coalition	C.E.O
16	Tomatos	3004257073	Syed M. Sajja Hussain Shah	0300-4257073	Sheikhupura	Market Committee	Chairman
17	Agribusiness	3008113917	Farukh Azeem	0300 811 3917	Lahore	Star Farm (Metro)	Manager Business Development
18	Supermarket	042-37509631	Muhammad Imran	3245000476	Lahore	Metro	Manager QA commodities & Ultra fresh General Management division
19	Food Company	021-35076841	Syed Farrukh Ahmed	0321-8224220	Karachi	Mehran Spice & Food Industries	Export Sales & marketing Manager
20	Food Company	021-35076841	Muhammad Iqbal	0345-2203865	Karachi	Mehran Spice & Food Industries	QA Manager
21	Company	021-35076841	Kamil Hassan	343244441	Karachi	Mehran Spice & Food Industries	National Sales Manager
22	Supermarket	2135205037	Arif Naqi	0300-8212788	Karachi	Imtiaz Super Market	Chief Executive Establishment
23	Food Company	021-32577707	Muhammad Arif Sheikh	0301-8282585	Karachi	National Foods	Manager Quality Research & Development
24	Food Company	021-32577707	Shakaib Arif	0300-8201015	Karachi	National Foods Limited	Chief Operating Officer
25	Food Company	021-35053684	Muhammad Siddique Misri	0300-8222466	Karachi	Zaiqa Food Industries	CEO
26	Agribusiness	042-35944676	Hasan Barq	0300-4698945	Lahore	Specialists Group Inc. Ltd	Executive Director
27	Agribusiness	042-35944676	Sultan Barq	0300-4698944	Lahore	Specialists Group Inc. Ltd	Chief Executive
28	Bananas	021-35293687	Ghulam Ali Shah Pasha	0301-8251999	Karachi	Qalandar Shahbaz University of Modern Sciences	Chancellor
29	Goods Carrier	042-37702751	Saddam Azhar	0333-4158141	Lahore	Behbal	

Annex IV

Sample Grades and Standards

Tomatoes and Grapes

US Department of Agriculture

United States
Department of
Agriculture

Agricultural
Marketing
Service

Fruit and
Vegetable
Division

Fresh
Products
Branch

United States Standards for Grades of Fresh Tomatoes

Effective October 1, 1991

(Reprinted - January 1997)

United States Standards for Grades of Fresh Tomatoes [1]

Grades
51.1855 U.S. No. 1.
51.1856 U.S. Combination.
51.1857 U.S. No. 2.
51.1858 U.S. No. 3.
Size
51.1859 Size.
Color Classification
51.1860 Color classification.
Tolerances
51.1861 Tolerances.
Application of Tolerances
51.1862 Application of tolerances.
Standard Weight
51.1863 Standard weight.
Definitions
51.1864 Similar varietal characteristics.
51.1865 Mature.
51.1866 Soft.
51.1867 Clean.
51.1868 Well developed.
51.1869 Fairly well formed.
51.1870 Fairly smooth.
51.1871 Damage.
51.1872 Reasonably well formed.
51.1873 Slightly rough.
51.1874 Serious damage.
51.1875 Misshapen.
51.1876 Very serious damage.
51.1877 Classification of defects.

Grades

§51.1855 U.S. No. 1.

"U.S. No. 1" consists of tomatoes which meet the following requirements:

(a) Basic requirements:

(1) Similar varietal characteristics;

[1]Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act, or with applicable State laws and regulations.

(2) Mature;
(3) Not overripe or soft;
(4) Clean;
(5) Well developed;
(6) Fairly well formed; and,
(7) Fairly smooth.
(b) Free from:
(1) Decay;
(2) Freezing injury; and
(3) Sunscald.
(c) Not damaged by any other cause.
(d) For tolerances see §51.1861.

§51.1856 U.S. Combination.

"U.S. Combination" consists of a combination of U.S. No. 1 and U.S. No. 2 tomatoes: **Provided,** That at least 60 percent, by count, meet the requirements of U.S. No. 1 grade.
(a) For tolerances see §51.1861.

§51.1857 U.S. No. 2.

"U.S. No. 2" consists of tomatoes which meet the following requirements:
(a) Basic requirements:
(1) Similar varietal characteristics;
(2) Mature;
(3) Not overripe or soft;
(4) Clean;
(5) Well developed;
(6) Reasonably well formed; and,
(7) Not more than slightly rough.
(b) Free from:
(1) Decay;
(2) Freezing injury; and,
(3) Sunscald.
(c) Not seriously damaged by any other cause.
(d) For tolerances see §51.1861.

§51.1858 U.S. No. 3.

"U.S. No. 3" consists of tomatoes which meet the following requirements:
(a) Basic requirements:
(1) Similar varietal characteristics;
(2) Mature;
(3) Not overripe or soft;
(4) Clean;
(5) Well developed; and,
(6) May be misshapen.
(b) Free from:
(1) Decay; and,

(2) Freezing injury.
(c) Not seriously damaged by:
(1) Sunscald.
(d) Not very seriously damaged by any other cause.
(e) For tolerances see §51.1861.

Size

§51.1859 Size.

(a) The size of tomatoes packed in any standard type shipping container shall be specified and marked according to one of the size designations set forth in Table I. Individual containers shall not be marked with more than one size designation. Consumer packages and their master container are exempt; however, if they are marked, the same requirements would apply.
(1) When containers are marked in accordance with Table I, the markings on at least 85 percent of the containers in a lot must be legible.
(2) In determining compliance with the size designations, the measurement for minimum diameter shall be the largest diameter of the tomato measured at right angles to a line from the stem end to the blossom end. The measurement for maximum diameter shall be the smallest dimension of the tomato determined by passing the tomato through a round opening in any position.
(b) In lieu of marking containers in accordance with (a) above or specifying size in accordance with the dimensions defined in Table I, for Cerasiforme type tomatoes commonly referred to as cherry tomatoes and Pyriforme type tomatoes commonly referred to as pear shaped tomatoes, and other similar types, size may be specified in terms of minimum diameter or minimum and maximum diameter expressed in whole inches, and not less than thirty-second inch fractions thereof, or millimeters in accordance with the facts.
(1) Tomatoes of these types are exempt from marking requirements. However, when marked to a minimum or minimum and maximum diameter, the markings on at least 85 percent of the containers in a lot must be legible.
(c) For tolerances see §51.1861.

Table I

Size Designations	Inches	
	Minimum Diameter[1]	Maximum Diameter[2]
Small	2-4/32	2-9/32
Medium	2-8/32	2-17/32
Large	2-16/32	2-25/32
Extra Large	2-24/32	

[1]Will not pass through a round opening of the designated diameter when tomato is placed with the greatest transverse diameter across the opening.

[2]Will pass through a round opening of the designated diameter in any position.

Color Classification

§51.1860 Color classification.

(a) The following terms may be used, when specified in connection with the grade statement, in describing the color as an indication of the stage of ripeness of any lot of mature tomatoes of a red fleshed variety:

(1) **Green**. "Green" means that the surface of the tomato is completely green in color. The shade of green color may vary from light to dark;

(2) **Breakers**. "Breakers" means that there is a definite break in color from green to tannish-yellow, pink or red on not more than 10 percent of the surface;

(3) **Turning**. "Turning" means that more than 10 percent but not more than 30 percent of the surface, in the aggregate, shows a definite change in color from green to tannish-yellow, pink, red, or a combination thereof;

(4) **Pink**. "Pink" means that more than 30 percent but not more than 60 percent of the surface, in the aggregate, shows pink or red color;

(5) **Light red**. "Light red" means that more than 60 percent of the surface, in the aggregate, shows pinkish-red or red: **Provided,** That not more than 90 percent of the surface is red color; and,

(6) **Red**. "Red" means that more than 90 percent of the surface, in the aggregate, shows red color.

(b) Any lot of tomatoes which does not meet the requirements of any of the above color designations may be designated as "Mixed Color".

(c) For tolerances see §51.1861.

(d) Tomato color standards U.S.D.A. Visual Aid TM- L-1 consists of a chart containing twelve color photographs illustrating the color classification requirements, as set forth in this section. This visual aid may be examined in the Fruit and Vegetable Division, AMS, U.S. Department of Agriculture, South Building, Washington, D.C. 20250; in any field office of the Fresh Fruit and Vegetable Inspection Service; or upon request of any authorized inspector of such Service. Duplicates of this visual aid may be purchased from The John Henry Co., Post Office Box 1410, Lansing, Michigan 48904.

Tolerances

§51.1861 Tolerances.

In order to allow for variations incident to proper grading and handling in each of the foregoing grades, the following tolerances, by count, are provided as specified:

(a) **U.S. No. 1 -** (1) **For defects at shipping point.**[2] Ten percent for tomatoes in any lot which fail to meet the requirements for this grade: **Provided,** That not more than one-half of this tolerance, or 5 percent, shall be allowed for defects causing very serious damage, including therein not more than 1 percent for tomatoes which are soft or affected by decay; and,

(2) **For defects en route or at destination.** Fifteen percent for tomatoes in any lot which fail to meet the requirements for this grade: **Provided,** That included in this amount not more than the following percentages shall be allowed for defects listed:

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[2]Shipping point, as used in these standards, means the point of origin of the shipment in producing area or at port of loading for ship stores or overseas shipment, or in the case of shipments from outside the continental United States, the port of entry into the United States.

(i) Five percent for tomatoes which are soft or affected by decay;
(ii) Ten percent for tomatoes which are damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,
(iii) Ten percent for tomatoes which are otherwise defective: **And provided further,** That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by any cause, exclusive of soft or decayed tomatoes.
(b) **U.S. Combination** - (1) **For defects at shipping point.**[2] Ten percent for tomatoes in any lot which fail to meet the requirements of the U.S. No. 2 grade: **Provided,** That not more than one-half of this tolerance, or 5 percent, shall be allowed for defects causing very serious damage, including 1 percent for tomatoes which are soft or affected by decay; and,
(2) **For defects en route or at destination**. Fifteen percent for tomatoes in any lot which fail to meet the requirements of the U.S. No. 2 grade: **Provided,** That included in this amount not more than the following percentages shall be allowed for defects listed:
(i) Five percent for tomatoes which are soft or affected by decay;
(ii) Ten percent for tomatoes which are seriously damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,
(iii) Ten percent for tomatoes which are otherwise defective: **And provided further,** That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by any cause, exclusive of soft or decayed tomatoes.
(c) **U.S. No. 2** - (1) **For defects at shipping point.**[2] Ten percent for tomatoes in any lot which fail to meet the requirements of this grade: **Provided,** That not more than one-half of this tolerance, or 5 percent, shall be allowed for defects causing very serious damage, including therein not more than 1 percent for tomatoes which are soft or affected by decay; and,
(2) **For defects en route or at destination.** Fifteen percent for tomatoes in any lot which fail to meet the requirements for this grade: **Provided,** That included in this amount not more than the following percentages shall be allowed for defects listed:
(i) Five percent for tomatoes which are soft or affected by decay;
(ii) Ten percent for tomatoes which are seriously damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,
(iii) Ten percent for tomatoes which are otherwise defective: **And provided further,** That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by any cause, exclusive of soft or decayed tomatoes.
(d) **U.S. No. 3** - (1) **For defects at shipping point.**[2] Ten percent for tomatoes in any lot which fail to meet the requirements of this grade: **Provided,** That not more than one-half of this tolerance, or 5 percent, shall be allowed for tomatoes which are very seriously damaged by insects and not more than one-tenth of the tolerance, or 1 percent, for tomatoes which are soft or affected by decay; and,
(2) **For defects en route or at destination.** Fifteen percent for tomatoes in any lot which fail to meet the requirements for this grade: **Provided,** That included in this amount not more than the

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[2]Shipping point, as used in these standards, means the point of origin of the shipment in producing area or at port of loading for ship stores or overseas shipment, or in the case of shipments from outside the continental United States, the port of entry into the United States.

following percentages shall be allowed for defects listed:
(i) Five percent for tomatoes which are soft or affected by decay;
(ii) Ten percent for tomatoes which are very seriously damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,
(iii) Ten percent for tomatoes which are otherwise defective: **And provided further,** That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by insects.
(e) **For off-size.** Ten percent for tomatoes in any lot which are smaller than the specified minimum diameter, or larger than the specified maximum diameter.
(f) **For off color.** Ten percent for tomatoes in any lot which fail to meet the color specified, including therein not more than 5 percent for tomatoes which are green in color, when any term other than "Green" is specified.

Application of Tolerances

§51.1862 Application of tolerances.

The contents of individual packages in the lot, based on sample inspection, are subject to the following limitations:
(a) For packages which contain more than 5 pounds (2.27 kg), and a tolerance of 10 percent or more is provided, individual packages shall have not more than 1-1/2 times the tolerance specified, and for a tolerance of less than 10 percent individual packages shall have not more than double the tolerance specified, except that at least one defective and one off-size specimen may be allowed in any package: **Provided,** That the averages for the entire lot are within the tolerances specified for the grade; and,
(b) For packages which contain 5 pounds (2.27 kg) or less individual packages shall have not more than 4 times the tolerance specified, except that at least one tomato which is soft, or affected by decay, and one off-size specimen may be permitted in any package: **Provided,** That the averages for the entire lot are within the tolerances specified for the grade.

Standard Weight

§51.1863 Standard weight.

(a) When packages are marked to a net weight of 15 pounds (6.80 kg) or more, the net weight of the contents shall not be less than the designated net weight and shall not exceed the designated weight by more than 2 pounds (0.91 kg).
(b) In order to allow for variations incident to proper sizing, not more than 15 percent, by count, of the packages in any lot may fail to meet the requirements for standard weight.

Definitions

§51.1864 Similar varietal characteristics.

"Similar varietal characteristics" means that the tomatoes are alike as to firmness of flesh and shade of color (for example, soft-fleshed, early maturing varieties are not mixed with firm-fleshed, midseason or late varieties, or bright red varieties mixed with varieties having a purplish tinge).

§51.1865 Mature.

"Mature" means that the tomato has reached the stage of development which will insure a proper completion of the ripening process, and that the contents of two or more seed cavities have developed a jelly-like consistency and the seeds are well developed.

§51.1866 Soft.
"Soft" means that the tomato yields readily to slight pressure.
§51.1867 Clean.
"Clean" means that the tomato is practically free from dirt or other foreign material.
§51.1868 Well developed.
"Well developed" means that the tomato shows normal growth. Tomatoes which are ridged and peaked at the stem end, contain dry tissue, and usually contain open spaces below the level of the stem scar, are not considered well developed.
§51.1869 Fairly well formed.
"Fairly well formed" means that the tomato is not more than moderately kidney-shaped, lop-sided, elongated, angular, or otherwise moderately deformed.
§51.1870 Fairly smooth.
"Fairly smooth" means that the tomato is not conspicuously ridged or rough.
§51.1871 Damage.
"Damage" means any specific defect described in §51.1877, Table II; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which materially detracts from the appearance, or the edible or marketing quality of the tomato.
§51.1872 Reasonably well formed.
"Reasonably well formed" means that the tomato is not decidedly kidney-shaped, lop-sided, elongated, angular, or otherwise decidedly deformed.
§51.1873 Slightly rough.
"Slightly rough" means that the tomato is not decidedly ridged or grooved.
§51.1874 Serious damage.
"Serious damage" means any specific defect described in §51.1877, Table II; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which seriously detracts from the appearance, or the edible or marketing quality of the tomato.
§51.1875 Misshapen.
"Misshapen" means that the tomato is decidedly kidney-shaped, lop-sided, elongated, angular or otherwise decidedly deformed: **Provided,** That the shape is not affected to an extent that the appearance or the edible quality of the tomato is very seriously affected.
§51.1876 Very serious damage.
"Very serious damage" means any specific defect described in §51.1877, Table II; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which very seriously detracts from the appearance, or the edible or marketing quality of the tomato.

§51.1877 Classification of defects.

Table II

References to Area, Aggregate Area, Length or Aggregate Length are based on a tomato having a diameter of 2-1/2 inches (64 mm)[1]

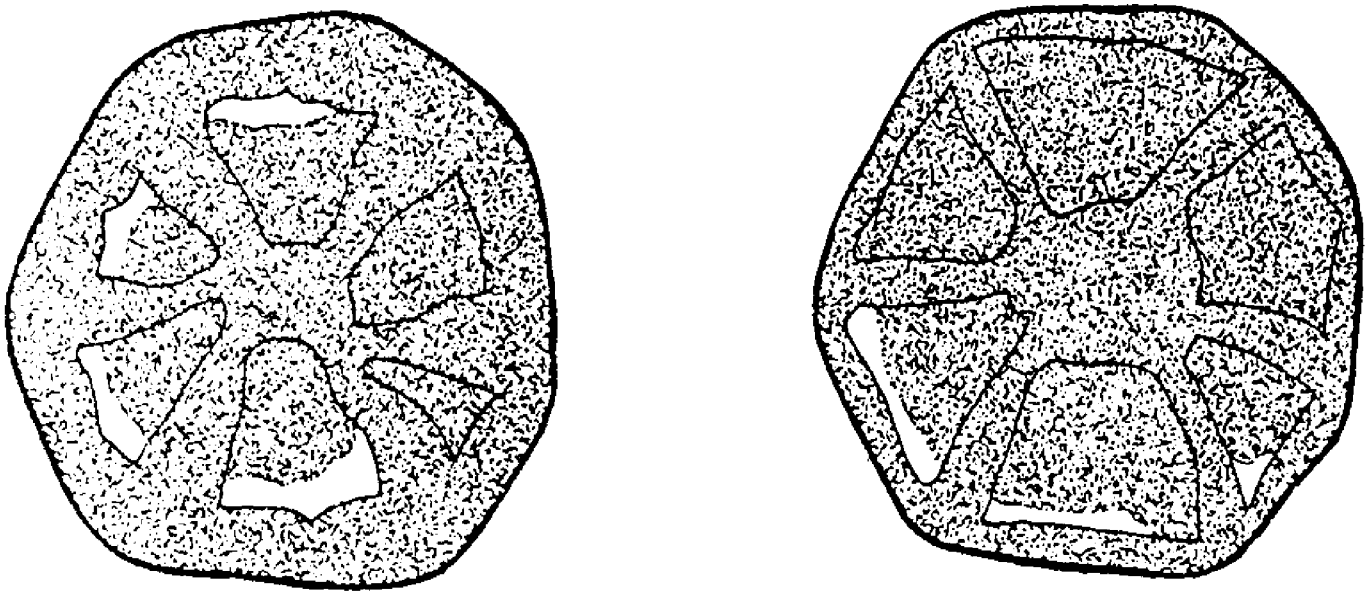
Factor	Damage	Serious Damage	Very serious damage
Cuts and broken skins	Not shallow or not well healed, or shallow, well healed cut more than 1/2 inch (13 mm) in length, or other shallow, well healed skin breaks aggregating more than a circle 3/8 inch (10 mm) in diameter.	Not shallow or not well healed, or shallow, well healed cut more than 1/2 inch (13 mm) in length, or other shallow, well healed skin breaks aggregating more than a circle 1/2 inch (13 mm) in diameter.	Fresh or healed and extending through the tomato wall.
Puffiness	Open space in 1 or more locules materially detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.	Open space in 1 or more locules seriously detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.	Open space in 2 or more locules very seriously detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.
Catfaces	Scars are rough or deep, channels are very deep or wide, channels extend into a locule, or a fairly smooth catface aggregating more than a circle 1/2 inch (13 mm) in diameter.	Scars are rough or deep, channels are very deep or wide, channels extend into a locule, or a fairly smooth catface aggregating more than a circle 3/4 inch (19 mm) in diameter.	Channels extend into the locule, wall has been weakened to the extent that slight pressure will cause a tomato to leak, or a fairly smooth catface aggregating more than a circle 1 inch (25 mm) in diameter.
Scars (other than catfaces).	No depth and aggregating more than a circle 3/8 (10 mm) in diameter.	No depth and aggregating more than a circle 5/8 (16 mm) in diameter.	No depth and aggregating more than a circle 1 inch (25 mm) in diameter.

[1]Conversion to metric equivalent, made to nearest whole millimeter.

Growth cracks (radiating from or concentric to stem scar).	Not well healed, more than 1/8 inch (3 mm) in depth, individual radial cracks more than 1/2 inch (13 mm) in length, aggregate length of all radial cracks more than 1 inch (25 mm) measured from edge of stem scar. Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking.	Not well healed, more than 1/8 inch (3 mm) in depth, individual radial cracks more than 3/4 inch (19 mm) in length, aggregate length of all radial cracks more than 1-3/4 inch (44 mm) measured from edge of stem scar. Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking.	Not well healed, more than 1/4 inch (6 mm) in depth, individual radial cracks more than 1 inch (25 mm) in length, aggregate length of all radial cracks more than 2-7/8 inches (73 mm) measured from edge of stem scar. Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking, not more than 1/8 inch (3 mm) in depth, individual radial cracks are not more than 3/4 inch (19 mm) in length.
Hail	Deep, rough, not well healed and corked over, or fairly smooth, shallow hail marks aggregating more than a circle 3/8 inch (10 mm) in diameter.	Deep, rough, not well healed and corked over, or fairly smooth, shallow hail marks aggregating more than a circle 5/8 inch (16 mm) in diameter.	Fresh, very deep or fairly smooth, shallow hail marks aggregating more than a circle 1 inch (25 mm) in diameter.
Insect Injury	Materially detracts from the appearance or any insect is present in the fruit.	Seriously detracts from the appearance or any insect is present in the fruit.	Very seriously detracts from the appearance or any insect is present in the fruit.

[1]Conversion to metric equivalent, made to nearest whole millimeter.

PUFFINESS

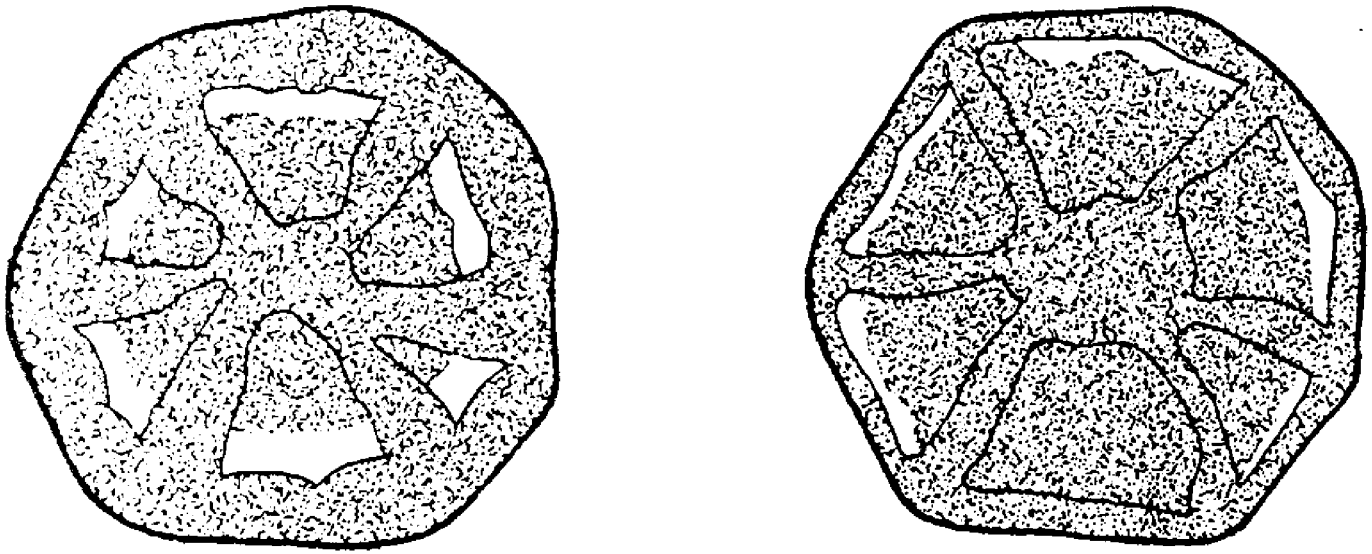


LOWER LIMIT U.S. NO. 1

The proportion of open space permitted is dependent upon the thickness of walls. Tomatoes with thicker walls than those in the above illustrations may have proportionately greater amounts of open space. Tomatoes with thinner walls than illustrated shall have proportionately lesser amounts of open space.

Illustration TOMFR 1

PUFFINESS

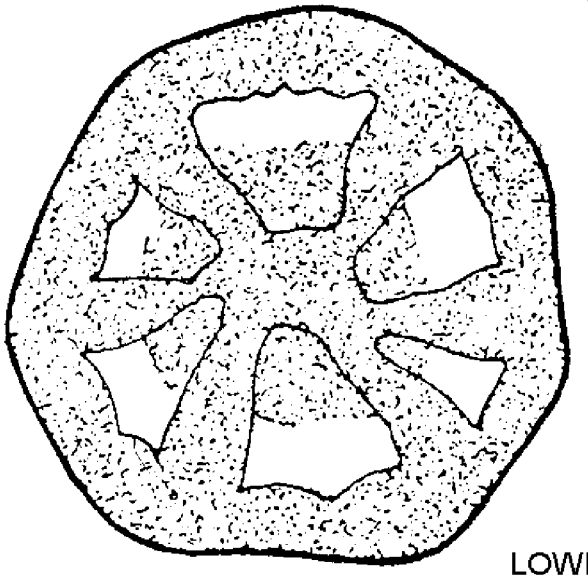


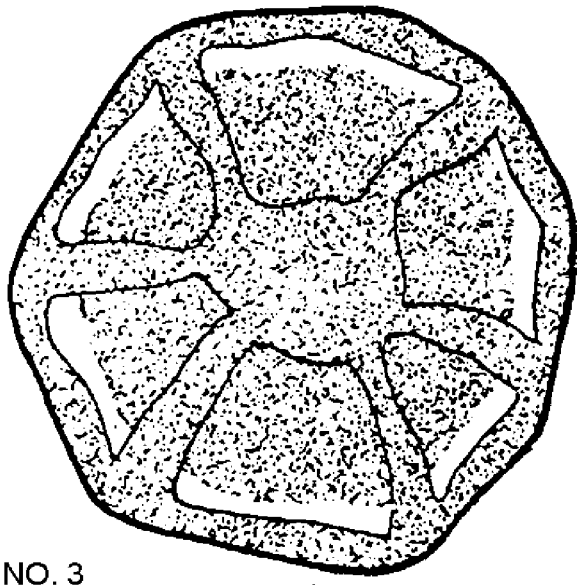
LOWER LIMIT U.S. NO. 2

The proportion of open space permitted is dependent upon the thickness of walls. Tomatoes with thicker walls than those in the above illustrations may have proportionately greater amounts of open space. Tomatoes with thinner walls than illustrated shall have proportionately lesser amounts of open space.

Illustration TOMFR 2

PUFFINESS



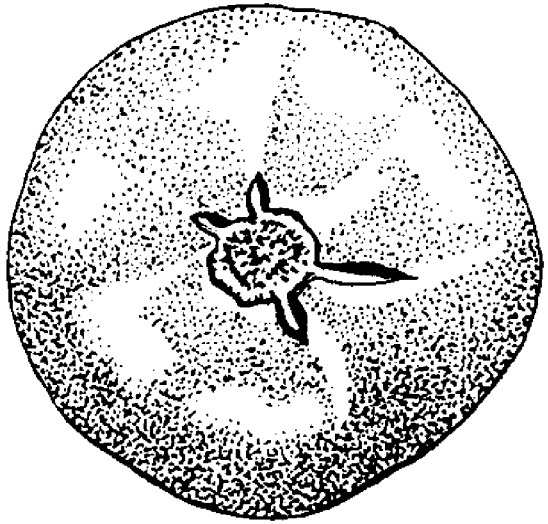


LOWER LIMIT U.S. NO. 3

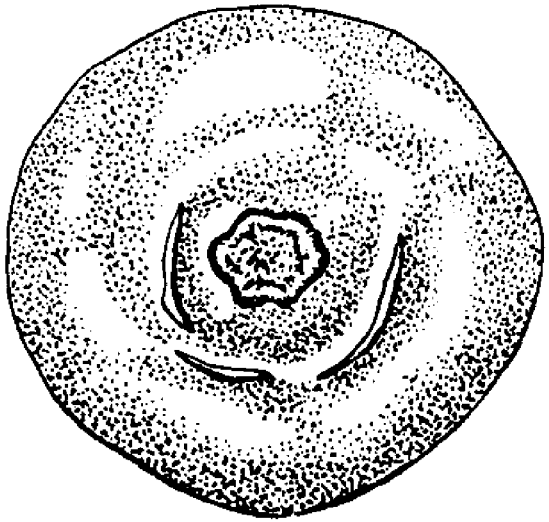
The proportion of open space permitted is dependent upon the thickness of walls. Tomatoes with thicker walls than those in the above illustrations may have proportionately greater amounts of open space. Tomatoes with thinner walls than illustrated shall have proportionately lesser amounts of open space.

Illustration TOMFR 3

GROWTH CRACKS



Maximum aggregate length of radial growth cracks permitted on 2 1/2 inch tomato in U.S. No. 1 grade.



Concentric growth cracks which affect appearance to same extent as maximum aggregate length of radial growth cracks permitted in U.S. No. 1 grade.

The above limitations apply to all stages of maturity.

Illustration TOMFR 4

United States Department of Agriculture

Agricultural Marketing Service

Fruit and Vegetable Programs

Fresh Products Branch

United States Standards for Grades of Table Grapes (European or Vinifera Type)

Effective March 29, 1999

(Reprinted - April 1999)

United States Standards for Grades of Table Grapes (European or Vinifera Type)

Grades
51.880 U.S. Extra Fancy Table.
51.881 U.S. Extra Fancy Export.
51.882 U.S. Fancy Table.
51.883 U.S. Fancy Export.
51.884 U.S. No. 1 Table.
51.885 U.S. No. 1 Institutional.
Tolerances
51.886 Tolerances.
Application of Tolerances
51.887 Application of tolerances.
Maturity Requirements
51.888 Maturity requirements.
Definitions
51.889 Well developed grapes.
51.890 One variety.
51.891 Uniform in appearance.
51.892 Color terms.
51.893 Firm.
51.894 Weak.
51.895 Shriveled at capstem.
51.896 Shattered.
51.897 Wet.
51.898 Decay.
51.899 Waterberry.
51.900 Sunburn.
51.901 Damage.
51.902 Fairly well filled.
51.903 Excessively tight.
51.904 Shot berries.
51.905 Dried berries.
51.906 Well developed and strong.
51.907 Diameter.
51.908 Serious damage.
51.909 Materially shriveled at capstem.
51.910 Straggly.
51.911 Container.

51.912 Export.
51.913 Clusters.
Metric Conversion Table
51.914 Metric conversion table.
Grades
§51.880 U.S. Extra Fancy Table.
"U.S. Extra Fancy Table" consists of bunches of well developed grapes of one variety, except when designated as assorted varieties, which are uniform in appearance, well colored, and which meet the following requirements:
(a) Basic requirements for berries:
(1) Mature;
(2) Firm;
(3) Firmly attached to capstem;
(4) Not weak;
(5) Not shriveled at capstem;
(6) Not shattered;
(7) Not split or crushed;
(8) Not wet.
(b) Basic requirements for bunches:
(1) Fairly well filled;
(2) Not excessively tight for the variety.
(c) Basic requirements for stems:
(1) Well developed and strong;
(2) Not dry and brittle;
(3) At least yellowish-green in color except for Cardinal, Robin, Exotic, and Beauty Seedless varieties.
(d) Berries free from:
(1) Decay;
(2) Waterberry;
(3) Sunburn;
(4) Almeria Spot.
(e) Stems free from:
(1) Mold;
(2) Decay.
(f) Berries not damaged by:
(1) Any other cause.
(g) Bunches not damaged by:
(1) Shot berries;
(2) Dried berries;
(3) Other defective berries;
(4) Trimming away of defective berries;
(5) Any other cause.
(h) Stems not damaged by:

(1) Freezing;
(2) Any other cause.
(i) Size:
(1) For berries: Exclusive of shot berries and dried berries, not less than 90 percent, by count, of the berries on each bunch shall have the minimum diameters indicated for varieties as follows:
(i) Ribier, Cardinal, Robin, Exotic, Queen, Italia Muscat, and other similar varieties thirteen-sixteenths of an inch.
(ii) Other varieties eleven-sixteenths of an inch.
(2) For bunches:
(i) Not less than one-half pound.
(j) For tolerances see §51.886.

§51.881 U.S. Extra Fancy Export.

"U.S. Extra Fancy Export" consists of grapes which meet the requirements for U.S. Extra Fancy Table and, in addition, meet the packaging requirements set forth in §51.912.

§51.882 U.S. Fancy Table.

"U.S. Fancy Table" consists of bunches of well developed grapes of one variety, except when designated as assorted varieties, which are at least reasonably well colored, uniform in appearance when so specified in connection with the grade, and which meet the following requirements:
(a) Basic requirements for berries:
(1) Mature;
(2) Firm;
(3) Firmly attached to capstem;
(4) Not weak;
(5) Not shriveled at capstem;
(6) Not shattered;
(7) Not split or crushed;
(8) Not wet.
(b) Basic requirements for bunches:
(1) Fairly well filled;
(2) Not excessively tight for the variety.
(c) Basic requirements for stems:
(1) Well developed and strong;
(2) Not dry and brittle.
(d) Berries free from:
(1) Decay;
(2) Waterberry;
(3) Sunburn;
(4) Almeria Spot.
(e) Stems free from:
(1) Mold;
(2) Decay.
(f) Berries not damaged by:
(1) Any other cause.

(g) Bunches not damaged by:
(1) Shot berries;
(2) Dried berries;
(3) Other defective berries;
(4) Trimming away of defective berries;
(5) Any other cause.
(h) Stems not damaged by:
(1) Freezing;
(2) Any other cause.
(i) Size:
(1) For berries: Exclusive of shot berries and dried berries, the following percentages, by count, of the berries on each bunch shall have the minimum diameters indicated for varieties as follows:
(i) For Ribier, Cardinal, Robin, Exotic, Queen, Italia Muscat, and other similar varieties, 90 percent shall be at least twelve-sixteenths of an inch;
(ii) For Thompson Seedless, Perlette, Delight, Beauty Seedless, Sugraone, Flame Seedless and other seedless varieties, 75 percent shall be at least ten-sixteenths of an inch; and,
(iii) For other varieties 90 percent shall be at least ten-sixteenths of an inch.
(2) For bunches:
(i) Not less than one-fourth pound.
(j) For tolerances see §51.886.

§51.883 U.S. Fancy Export.

"U.S. Fancy Export" consists of grapes which meet the requirements for U.S. Fancy Table, except that bunches shall weigh not less than one-half pound, and in addition meet the packaging requirements set forth in §51.912.

§51.884 U.S. No. 1 Table.

"U.S. No. 1 Table" consists of bunches of well developed grapes of one variety, except when designated as assorted varieties, which are at least fairly well colored, uniform in appearance when so specified in connection with the grade, and which meet the following requirements:
(a) Basic requirements for berries:
(1) Mature;
(2) Firm;
(3) Firmly attached to capstem;
(4) Not weak;
(5) Not materially shriveled at capstem;
(6) Not shattered;
(7) Not split or crushed;
(8) Not wet.
(b) Basic requirements for bunches:
(1) Not straggly.
(c) Basic requirements for stems:
(1) Not weak, or dry and brittle.
(d) Berries free from:
(1) Decay;

(2) Waterberry;
(3) Sunburn.
(e) Stems free from:
(1) Decay;
(2) Mold.
(f) Berries not damaged by:
(1) Any other cause.
(g) Bunches not damaged by:
(1) Shot berries;
(2) Dried berries;
(3) Other defective berries;
(4) Trimming away of defective berries;
(5) Any other cause.
(h) Stems not damaged by:
(1) Freezing;
(2) Any other cause.
(i) Size:
(1) For berries: Exclusive of shot berries and dried berries, 75 percent, by count, of the berries on each bunch shall have the minimum diameters indicated for varieties as follows:
(i) Thompson Seedless, Perlette, Delight, Beauty Seedless, Sugraone, Flame Seedless and other seedless varieties nine-sixteenths of an inch.
(ii) Other varieties ten-sixteenths of an inch.
(2) For bunches:
(i) Not less than one-fourth pound.
(j) For tolerances see §51.886.

§51.885 U.S. No. 1 Institutional.

"U.S. No. 1 Institutional" grapes must have no less than 95 percent of the containers in the lot legibly marked "Institutional Pack." Further requirements for this grade include grapes which consist of clusters and/or bunches of well developed grapes of one variety, except when designated as assorted varieties, which are at least fairly well colored, uniform in appearance when so specified in connection with the grade, and which meet the following requirements:
(a) Basic requirements for berries:
(1) Mature;
(2) Firm;
(3) Firmly attached to capstem;
(4) Not weak;
(5) Not materially shriveled at capstem;
(6) Not shattered;
(7) Not split or crushed;
(8) Not wet.
(b) Basic requirements for stems:
(1) Not weak, or dry and brittle.
(c) Berries free from:

(1) Decay;
(2) Waterberry;
(3) Sunburn.
(d) Stems free from:
(1) Mold;
(2) Decay.
(e) Berries not damaged by:
(1) Any other cause.
(f) Bunches not damaged by:
(1) Shot berries;
(2) Dried berries;
(3) Other defective berries;
(4) Any other cause.
(g) Stems not damaged by:
(1) Freezing;
(2) Any other cause.
(h) Size:
(1) For berries: Exclusive of shot berries and dried berries, 75 percent, by count, of the berries on each bunch shall have the minimum diameters indicated for varieties as follows:
(i) Thompson Seedless, Perlette, Delight, Beauty Seedless, Sugraone, Flame Seedless and other seedless varieties nine-sixteenths of an inch.
(ii) Other varieties ten-sixteenths of an inch.
(2) For clusters/bunches: In this grade grapes shall consist of at least a two berry cluster ranging to clusters and/or bunches of grapes not greater than five ounces in weight. See Section 51.913.
(i) For tolerances see Section 51.886.

Tolerances

§51.886 Tolerances.

(a) No tolerances are provided in these standards for grapes which fail to meet the applicable maturity requirements other than the allowances specified in §51.888 or in the sampling and testing procedures of State maturity regulations.
(b) In order to allow for variations incident to proper grading and handling in each of the foregoing grades except U.S. No. 1 Institutional, tolerances, by weight, other than for maturity, are provided as set forth in Tables I and II.

Table I -- Tolerances at Shipping Point[1]

[Percent]

Factor	U.S. Extra Fancy Table	U.S. Fancy Table	U.S. No. 1 Table
(A) For bunches failing to meet color requirements ----------	10	10	10
(B) For bunches failing to meet requirements for minimum diameter of berries ----------	10	10	10
(C) For bunches failing to meet stem color requirements ----------	10		
(D) For offsize bunches and for bunches and berries failing to meet the remaining requirements for the grade ----------	8	8	8
Including in (D):			
(a) For serious damage ----------	2	2	2
And, including in (a):			
(i) For decay ----------	½ of 1	½ of 1	½ of 1

Table II Tolerances En Route or at Destination

[Percent]

Factor	U.S. Extra Fancy Table	U.S. Fancy Table	U.S. No. 1 Table
(A) For bunches failing to meet color requirements ----------	10	10	10
(B) For bunches failing to meet requirements for minimum diameter of berries ----------	10	10	10
(C) For bunches failing to meet stem color requirements ----------	10		
(D) For offsize bunches and for bunches and berries failing to meet the remaining requirements for the grade ----------	12	12	12
Including in (D):			
(a) For permanent defects ----------	8	8	8
(b) For serious damage----------	4	4	4
And, including in (b):			
(i) For serious damage by permanent defects---	2	2	2
(ii) For decay ----------	1	1	1

[1]Shipping Point, as used in these standards, means the point of origin of the shipment in the producing area or at port of loading for ship stores or overseas shipment, or, in the case of shipments from outside the continental United States, the port of entry into the United States.

(c) In order to allow for variations incident to proper grading and handling in the U.S. No. 1 Institutional grade only, tolerances, by weight, other than for maturity, are provided as set forth in Tables Ia and IIa of this section.

TABLE Ia -- TOLERANCES AT SHIPPING POINT FOR U.S. NO. 1 INSTITUTIONAL GRADE ONLY [1]

[Percent]

Factor	U.S. No. 1 Institutional
(A) For clusters/bunches failing to meet color requirements	10
(B) For clusters/bunches failing to meet requirements for minimum diameter of berries	10
(C) For offsize clusters/bunches	4
(D) For clusters/bunches and berries failing to meet the remaining requirements for the grade	8
Including in (D):	
(a) For serious damage	2
And, including in (a):	
(i) For decay	½ of 1

TABLE IIa -- TOLERANCES EN ROUTE OR AT DESTINATION FOR U.S. NO. 1 INSTITUTIONAL GRADE ONLY

[Percent]

Factor	U.S. No. 1 Institutional
(A) For clusters/bunches failing to meet color requirements	10
(B) For clusters/bunches failing to meet requirements for minimum diameter of berries	10
(C) For offsize clusters/bunches	4
(D) For clusters/bunches and berries failing to meet the remaining requirements for the grade	12
Including in (D):	
(a) For permanent defects	8
(b) For serious damage	4
And, including in (b):	
(i) For serious damage by permanent defects	2
(ii) For decay	1

[1]Shipping Point, as used in these standards, means the point of origin of the shipment in the producing area or at port of loading for ship stores or overseas shipment, or, in the case of shipments from outside the continental United States, the port of entry into the United States.

Application of Tolerances

§51.887 Application of tolerances.

The contents of the individual packages in any lot, based on sample inspection, are subject to the following limitations: Provided, That the averages for the entire lot are within the tolerances specified for the grade:

(a) For tolerances of 10 percent or more, individual packages may contain not more than one and one-half times the specified tolerance.

(b) For a tolerance of less than 10 percent, individual packages may contain not more than double the specified tolerance.

§ 51.888 Maturity requirements.

(a) In the case of grapes grown in Arizona or California, "mature" means grapes in any lot shall meet the maturity requirements for the variety as set forth in the applicable State Agricultural Laws and Regulations referenced in this section. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from, in the case of Arizona maturity regulations, Arizona Department of Agriculture, Citrus, Fruit and Vegetable Standardization, 1688 W. Adams, Phoenix, AZ 85007 or in the case of California maturity regulations, California Department of Food and Agriculture, Fruit and Vegetable Quality Control, Standardization Section, 1220 N Street, P.O. Box 942871, Sacramento, California 94271-0001 or copies of both regulations may be inspected at USDA, AMS, F&VD, FPB, Standardization Section, Room 2065-S, 14th and Independence Ave., Washington, DC 20250 or at the Office of the Federal Register, Suite 700, 800 North Capitol, Washington, DC.

(1) Arizona maturity regulations are contained in Chapter 4 - Plant Services Division, Article 7. Fruit And Vegetable Standardization, Section R3-4-733 Table Grape Standards, Effective January 6, 1994.

(2) California maturity regulations are contained in The California Code of Regulations, Title 3, Subchapter 4, Fresh Fruits, Nuts and Vegetables, Article 25 Table Grapes and Raisins, February 28, 1992.

(b) Grapes subject to U.S. import regulations shall meet the maturity requirements specified in such regulations.

(c) Grapes produced in States other than Arizona or California, or grapes imported from countries outside the United States during periods in which U.S. import regulations do not apply, shall meet the minimum percentage of soluble solids set forth in Table III as determined by use of a standard hand refractometer.

Table III

Variety	Percent of soluble solids
Muscat ----------	17.5
All varieties not listed in this table ----------	16.5
Cardinal, Emperor, Perlette, Ribier, Olivette Blanche, Rish Baba, Red Malaga, and similar varieties ----------	15.5

(1) The minimum percentage of soluble solids for any lot shall be determined from the juice of at least 10 percent, by weight, of whole bunches of the least mature grapes in that container which appears to have the least mature grapes. No lot shall be considered as failing to meet these requirements unless samples from two containers which appear to have the least mature grapes test below the required percentage of soluble solids.

Definitions

§51.889 Well developed grapes.

"Well developed" grapes means grapes which are not abnormally small for the variety.

§51.890 One variety.

"One variety" means that the grapes show similar varietal characteristics.

§51.891 Uniform in appearance.

"Uniform in appearance" means that not more than one-tenth of the containers in any lot show sufficient variation in color or size of berries to materially detract from the appearance of the contents of the individual container, and that the stems are well developed and strong.

§51.892 Color terms.

The color terms "well colored," "reasonably well colored," and "fairly well colored" are defined in Table IV.

Table IV

Color terms	Black varieties	Red varieties	White varieties
Well colored (U.S. Extra Fancy).	Each bunch shall have not less than 95 percent, by count, of berries showing good characteristic color.[1]	Each bunch shall have not less than 75 percent, by count, of berries showing good characteristic color.[1]	No requirement.
Reasonably well colored (U.S. Fancy).	Each bunch shall have not less than 85 percent, by count, of berries showing good characteristic color.[1]	Each bunch shall have not less than 66-2/3 percent, by count, of berries showing good characteristic color [1] except the Tokay and Cardinal varieties shall have not less than 75 percent, by count, of berries showing characteristic color.[2]	No requirement.
Fairly well colored (U.S. No. 1).	Each bunch shall have not less than 75 percent, by count, of berries showing characteristic color.[2]	Each bunch shall have not less than 60 percent, by count, of berries showing characteristic color.[2]	No requirement.

[1] Good characteristic color for black varieties means purple to black except that Ribier or similar varieties of grapes shall have at least two-thirds of the surface of the berry showing purple to black color.

For red varieties good characteristic color means at least two-thirds of the surface of the berry is light red through dark red color; except, for the Tokay variety pink through dark red, and for the Cardinal variety light red through purple shall be permitted.

[2] Characteristic color for black varieties means reddish-purple to black except that Ribier or similar varieties of grapes shall have at least two-thirds of the surface of the berry showing reddish-purple to black color.

For red varieties characteristic color means at least two-thirds of the surface of the berry is pink to dark red; except, for the Tokay variety light pink through dark red and for the Cardinal variety light pink through purple color shall be permitted.

§51.893 Firm.
"Firm" means that the berry does not yield more than slightly to moderate pressure and is not flabby or wilted.
§51.894 Weak.
"Weak" means that individual berries are somewhat translucent, watery and soft, may have relatively low sugar content, inferior flavor, or are of poor keeping quality.
§51.895 Shriveled at capstem.
"Shriveled at capstem" means that the berry shows more than slight wrinkling of the skin surrounding the capstem.
§51.896 Shattered.
"Shattered" means that the berry is separated from the bunch and may or may not have the capstem attached.
§51.897 Wet.
"Wet" means that the grapes are wet from moisture from crushed, leaking, or decayed berries or from rain. Grapes which are moist from dew or other moisture condensation such as that resulting from removing grapes from a refrigerator car or cold storage to a warmer location shall not be considered as wet.
§51.898 Decay.
"Decay" means any soft breakdown of the flesh or skin of the berry resulting from bacterial or fungus infection. Slight surface development of green mold (Cladosporium) shall not be considered decay.
§51.899 Waterberry.
"Waterberry" means a watery, soft, or flabby condition of the berry. Affected berries are low in sugar content, have tender skins, and are easily crushed. This is an advanced or more pronounced stage of the condition referred to as "weak".
§51.900 Sunburn.
"Sunburn" means injury to the berry caused by exposure to the sun, including "sulphur burn," usually occurring as a sunken and discolored or dried area on the exposed surface.
§51.901 Damage.
"Damage" means any specific defect described in this section; or an equally objectionable variation of any one of these defects, or any other defect, or any combination of defects which materially detracts from the appearance, or the edible or marketing quality of the individual berry, the appearance of the bunch as a whole, or the marketing quality of the stems.
(a) The following shall be considered as damage to the individual berry:
(1) Scarring such as that caused by thrips, mildew, rubs, and similar injuries when materially detracting from the appearance of the berry;
(2) Discoloration when any light brown, tan, or darker discoloration of the skin materially detracts from the appearance of the berry: Provided, That "sunkissed" berries of the white Malaga variety which show discoloration of amber or light brown color shall not be considered as damaged. "Buckskin" berries of the Tokay variety, and similar injury to other varieties, shall be considered as damaged by discoloration;
(3) Heat when the flesh of the berry is affected;
(4) Almeria Spot when any spot is distinctly sunken or dark in color;
(5) Mildew when active powdery mildew is present;
(6) Freezing when the berry is frozen or when the flesh of the berry is affected by freezing;

(7) Insect injury when penetrating the skin of the berry or when there is noticeable insect infestation on the bunch; when mealybug residue or aphis honeydew are present in noticeable amounts; or when leafhopper residue materially detracts from the appearance of the individual berry or of the bunch.
(b) The following shall be considered as damage to stems:
(1) Active powdery mildew or any other disease when present on the stems to the extent that it detracts from the appearance of the bunch or when scars caused by mildew or other disease constrict or weaken any part of the main or lateral stems; and,
(2) Freezing when the stems are frozen or the capstems are swollen or dried, or when the main or lateral stems are water-soaked and limp, or dried, as a result of freezing.

§51.902 Fairly well filled.

"Fairly well filled" means that the berries are reasonably closely spaced on main and lateral stems and that the bunch is not very loose or stringy.

§51.903 Excessively tight.

"Excessively tight" means that the berries are so wedged together that the bunch is extremely compact for the variety and resulting distorted berries materially detract from the appearance of the bunch.

§51.904 Shot berries.

"Shot berries" means very small berries resulting from insufficient pollination, usually seedless in those varieties which normally develop seeds.

§51.905 Dried berries.

"Dried berries" means berries which are dry and shriveled to the extent that practically no moisture is present.

§51.906 Well developed and strong.

"Well developed and strong" means that the main and lateral stems are firm, fibrous, and pliable; not distinctly immature or spindly or threadlike at time of packing.

§51.907 Diameter.

"Diameter" means the greatest dimension of the berry taken at right angles to a line running from the stem to the blossom end.

§51.908 Serious damage.

"Serious damage" means any defect or any combination of defects which seriously detracts from the appearance, or the edible or marketing quality of the grapes and includes berries which are split, crushed, wet, affected by decay or waterberry, or affected by heat or freezing. Grapes which show healed cracks at the blossom and shall not be considered as seriously damaged.

§51.909 Materially shriveled at capstem.

"Materially shriveled at capstem" means that the skin of the berry is definitely wrinkled adjacent to the capstem and the surface is materially sunken.

§51.910 Straggly.

"Straggly" means that the berries are so widely spaced on main and lateral stems that the bunch is distinctly open or very stemmy or stringy in structure.

§51.911 Container.

"Container" as used in these standards shall, for the purposes of determining maturity and other factors of grade of grapes in packages containing 5 pounds or less, mean the master container in which the individual packages are packed for shipment.

§51.912 Export.

When designated as Export, grapes shall be packed with any of the customary protective materials such as cushions, liners, or wraps, or properly packed in sawdust or granulated cork. The so-called "semi-sawdust packs" which are cushioned and/or covered with sawdust are not approved as protective packaging for export.

§51.913 Clusters.

"Clusters" as used in these standards in reference to the U.S. No. 1 Institutional grade only shall be defined as two or more berries sharing a common point of attachment.

Metric Conversion Table

§51.914 Metric conversion table.

Inches	Millimeters (mm)
3/16 equals	4.8
8/16 equals	12.7
9/16 equals	14.3
10/16 equals	15.9
11/16 equals	17.5
12/16 equals	19.1
13/16 equals	20.6
14/16 equals	22.2
15/16 equals	23.8
1 equals	25.4
Pounds	**Grams**
1/4 equals	113.4
1/2 equals	226.8
3/4 equals	340.2
1 equals	453.6
2 equals	907.2
3 equals	1,360.8
4 equals	1,814.4
5 equals	2,268.0
10 equals	4,536.0

Table Grape Maturity Chart

Percent Soluble Solids	Arizona Agricultural Code[1]	California Agricultural Code[2]	U.S. Standards for Origins Outside California & Arizona[3]
17.5		All white varieties of Muscat and White Malaga grown NW of San Gorgonio Pass	Muscat
17.0		Thompson Seedless grown NW of San Gorgonio Pass	
16.5		All varieties not listed elsewhere in this column	All varieties not listed in this column
16.0	Thompson Seedless Flame Seedless		
15.5		Beauty Seedless grown SE of San Gorgonio Pass. Berenda Red, Cardinal, Imperial Cardinal, Richards Black, and Robin grown NW of San Gorgonio Pass Blackrose, Isabella Regia, Bleu Grau, Khalili, Burger, Perlette, California Concord, Persian 23, Concord, Pierce Isabella, Dattier de Beyrouth, Queen, Delight, Red Malaga, Dizmar, Ribier, Drodelabi, Servian Blue, Emperor, Sugraone, Fresno Beauty	Cardinal, Emperor, Perlette, Ribier, Olivette, Blanche, Rish Baba, Red Malaga, and similar varieties.
15.0	Perlette, Beauty Seedless		
14.5		Cardinal, Robin, Berenda Red, Imperial Cardinal, and Richards Black grown SE of San Gorgonio Pass; and Lady finger, Rish Baba, Khandahar, Olivette Blanche	
14.0	Exotic	Exotic	

[1] Varieties listed, when tested by refractometer, are mature when meeting or exceeding the specified soluble solids. All varieties, regardless of refractometer reading, are mature at 18 to 1 or higher titration ratio.

[2] All varieties, when tested by temperature compensated hand refractometer, are mature when meeting or exceeding the specified soluble solids percentage. The Thompson Seedless at 15 percent or more soluble solids and Perlette or Sugraone at 14 percent or more soluble solids and all other varieties regardless of refractometer reading are mature, provided that the juice contains a minimum of 20 parts soluble solids to every part acid in the juice as determined by titration. Thompson Seedless below 15 percent soluble solids, and Perlette or Sugraone below 14 percent soluble solids may not be titrated. They are immature with out further testing. The California Agricultural Code should be consulted for official sampling guidelines and titration procedures.

[3] All varieties, when tested by refractometer, are mature when meeting or exceeding the specified soluble solids.