Final Report

of the Working Group on

AGRICULTURAL MARKETING INFRASTRUCTURE AND POST HARVEST MANAGEMENT

for the 10th Five Year People's Plan, 2010-15

December, 2009

Food and Agriculture Section, Planning Commission
Islamabad

Dated: _____

Subject: **Final Report of the Working Group on Agricultural marketing Infrastructure and Post Harvest Management**

Dear Dr. M .E. Tusneem,

Assalamu alaikum Warahmat Ullah Wabarakatuh,

The Planning Commission of Pakistan constituted a Working Group on "Agricultural Marketing Infrastructure and Post Harvest Management" on August 29, 2009 for the 10th Five Year People's Plan 2010-15. The main task for the Working Group was to review existing marketing system of agricultural commodities (wheat, rice, cotton, sugarcane, oilseeds, pulses, horticulture products, milk, meat, etc.) and recommend strategies/policies for improvement. Also, to review existing regulatory arrangements for ensuring quality of inputs/outputs, and making recommendations for compliance with SPS requirements and promoting exports; to examine adequacy of existing storage/cool chain infrastructure; and recommend public policy interventions, institutional arrangements and investment for enhancing capacity and reducing post harvest losses that would help contain food inflation and protection of consumer rights.

Within the given time and resources, the Working Group has come up with a package of policy measures for the improvement of existing agricultural marketing system.

I would like to thank all members of the Working Group and other experts for their timely and quality inputs in preparing this report. The services provided by the Planning Commission are highly appreciated.

With profound regards,

Yours faithfully,

(Prof. Dr. Iqrar Ahmad Khan)
Chairman
Working Group

Dr. M .E. Tusneem
Member (Food & Agriculture)
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Acknowledgements

The Planning Commission constituted different Working Groups for various sectors of the economy to seek suggestions and advice from stakeholders in the preparation of 10th Five Year People's Plan 2010-15. The Working Group on Agricultural Marketing Infrastructure and Post Harvest Management was one among these Groups constituted under the Chairmanship of Professor Dr. Iqrar Ahmad Khan, Vice Chancellor, University of Agriculture, Faisalabad. The Group held two meetings on September 05, 2009 and October 13, 2009 at the Planning Commission and deliberated at the University of Agriculture, Faisalabad on the issues faced in the areas of Agricultural Marketing and Post Harvest Management. Based on discussions and follow up suggestions from the members, recommendations and future initiatives were formulated.

The valuable inputs provided by all the members of the Working Group are highly appreciated and acknowledged. The Chairman of the Group, Professor Dr. Iqrar Ahmad Khan, was highly energetic and supportive of the deliberations and in the conduct of meetings. He played a leading role in discussions and formulation of recommendations. His leadership qualities are highly commendable.

The compilation was led by Professor Dr. Khalid Mustafa, Chairman Department of Marketing and Agribusiness, University of Agriculture, Faisalabad and his team. Especially, Mr. Abdul Ghafoor and Mr. Hammad Badar worked hard. It would have been very difficult to bring out this document without their cooperation and efforts.

During the process of these deliberations and consultations, the support of the officers and staff of Food & Agriculture Section of Planning Division is highly appreciated. They actively participated in the meetings and provided logistic and moral support for successfully organizing the meetings.

(M. Hashim Laghari)
Horticulture Specialist/
Member/ Secretary of the Group

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Abbreviations

ADB	Asian Development Bank
AMIS	Agricultural Marketing Information System
AoA	Agreement on Agriculture
API	Agricultural Policy Institute
ASF	Agribusiness Support Fund
CABs	Conformity Assessment Bodies
CAC	Codex Alimentarius Commission
DALPMG	Department of Agricultural and Livestock Product Marketing and Grading
FAO	Food and Agriculture Organization
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
HACCP	Hazard Analysis and Critical Control Points
HYV	High Yielding Varieties
IAF	International Accreditation Forum
ILAC	International Laboratory Accreditation Council
IPPC	International Plant Protection Convention
ISO	International Organization for Standardization
LDCs	less Developed Countries
LDDB	Livestock & Dairy Development Board
MINFA	Ministry of Food and Agriculture
NLC	National Logistic Cell
NWFP	North West Frontier Province
OIE	International Office of Epizootics
PAMCO	Punjab Agricultural Marketing Company
PARC	Pakistan Agricultural Research Council
PASSCO	Pakistan Agricultural Storage and Services Corporation
PDDC	Pakistan Dairy Development Company
PHDEB	Pakistan Horticulture Development and Export Board
PHDEC	Pakistan Horticulture Development and Export Company
PIAM	Punjab Institute of Agricultural Marketing
PNAC	Pakistan National Accreditation Council
PSQCA	Pakistan Standard and Quality Control Authority
RECP	Rice Export Corporation of Pakistan
SPS	Sanitary and Phytosanitary Agreement
TCP	Trading Corporation of Pakistan
TEVTA	Technical Education and Vocational Training Authority
TRIPS	Trade Related Intellectual Property Rights Agreement
UAE	United Arab Emirates
UCL	United Consultants Group Limited
USFDA	United States Food and Drugs Administration
WHO	World Health Organization
WTO	World Trade Organization

Executive Summary

Agriculture is the most important sector of the economy and the single largest sector for economic growth and development. The growth of agriculture sector heavily relies on the development of efficient and effective agricultural marketing system providing useful services to stakeholders. Inadequate agricultural marketing infrastructure and improper post harvest handling of farm produce hampers smooth functioning of agricultural marketing system and results in quantitative and qualitative losses, causing welfare loss to stakeholders.

2. Government undertook various policy reforms to improve working of the agricultural marketing system in the country. However, development of the system took place at a lower pace. Many weaknesses viz. inefficiencies in the methods of buying and selling, assembling and processing, transportation of farm produce, utilization of market resources entailed the marketing system in the country. Policy measures (proper implementation of grades and standards for agricultural commodities, grant of agricultural loans by Agricultural Development Bank of Pakistan to farmers for the purchase of fertilizers, HYV seeds, farm implements and pesticides, training of stakeholders in post harvest management and grant of subsidy for the construction of cold storages in different production areas) were undertaken to ensure reasonable prices to the stakeholders and to improve efficiency of agricultural marketing system in the country. Nevertheless, these attempts yielded mixed success.

3. Policy reforms introduced by the government in the five year plans aimed at evolution and implementation of support price mechanism and making necessary arrangements for food grains (especially rice) export keeping in view the trends and requirements of international markets, develop market infrastructure and ensure timely availability of agricultural inputs (chemical fertilizers, pesticides and farm machinery) at reasonable prices, supplement imports when necessary, diversify exports and ensure price stability in the domestic market. Attempts were made to implement various recommendations outlined in the five year plans. Commodity Boards, Pakistan Agricultural Storage and Services Corporation, Pakistan Horticulture Development & Export Board, Agricultural Prices Commission and various other Institutions were established at the federal level to ensure better returns to producers and fair prices to consumers.

4. Medium Term Development Framework (2005-2010) advocated the policy of privatization, deregulation and market orientation for the domestic economy. Appropriate measures were undertaken to strengthen the agricultural marketing system by bringing improvements in marketing infrastructure and post harvest management; however, little progress was achieved in realizing the desired goals.

5. The present agricultural marketing system in Pakistan is characterized with numerous market players who perform different functions in transferring farm produce to consumers. It is observed that an agricultural commodity changes seven to eight different hands before reaching ultimate consumer. Functions performed by various market

functionaries (especially the middlemen in the market chain) remain one of the most controversial issues in Pakistan's agricultural economy. It is argued that middlemen exploit marginal farmers and hamper their legitimate share.

6. Infrastructure plays vital role in facilitating and ensuring smooth functioning of agricultural marketing system. Wholesale markets for instance, act as a cardinal link between producers and consumers and are operated by public and private sectors. Most of the wholesale markets in the country however give a poor look-lack basic infrastructure (efficient logistics, storage and other marketing facilities), putting farmers at a disadvantageous situation while selling their produce.

7. Improper post-harvest handling of agricultural produce results in quantitative and qualitative losses causing rise in consumer prices. These losses are enormous particularly for perishables. It is estimated that out of total production of fruits and vegetables about 35-40 percent goes to waste, losses varying from 6 percent each in almond and walnuts, to more than 50 percent in case of cherry, mulberry and apricots. The post-harvest losses in food grains are considered to be between 8-12, percent ranging from 10 percent in wheat to 15 percent in rice. Similarly, other major crops like cotton and sugarcane are also exposed to significant post-harvest losses. In the case of fish, 10-15 percent of total catch goes to waste due to long voyage time and poor handling of fish catch on board.

8. A great export potential of agro-based products, particularly fruits and vegetables and livestock products exists in Pakistan, but stringent application of international standards hamper realisation of their real potential. In particular, Pakistan is constrained in its ability to export agricultural and food products to developed countries under SPS requirements. In certain circumstances, SPS requirements are incompatible with prevailing systems of production and marketing in Pakistan. The limitation Pakistan has in complying with SPS requirements reflects its wider resource and infrastructure constraints. A particularly acute problem is access to appropriate scientific and technical expertise. Indeed, in Pakistan knowledge of SPS issues is poor, both within government and the food supply chain, and the skills required to assess SPS measures applied by developed countries are lacking.

9. Intermittent food crisis in Pakistan has highlighted many imperfection and inefficiencies in the agricultural marketing system. Absence of modern wholesale markets; insufficient farm to market roads and storage, cool chain network, processing and packaging facilities; non implementation of grades and standards; weak agricultural marketing information system; and poor post harvest management practices continue to affect badly the efficiency of the marketing system. An integrated and pro-active approach is needed. Government alone cannot achieve desired targets. Farming community and private sector will have to shake hands with public sector for introducing innovations and improving agricultural marketing infrastructure and post harvest management.

10. Keeping in view the important role performed by wholesale markets, steps may be undertaken to establish new model markets and revamp the existing ones with

requisite facilities and infrastructure provisions. In this context, role of market committees needs to be improved and various provisions of Agricultural Produce Markets Acts strictly enforced. Policy reforms should focus on establishing new storage facilities at farm and market levels, besides undertaking measures to establish new cold storage facilities on scientific lines. Private investment should be attracted by granting special incentives (e.g. zero rated import of equipments and tax exemptions) to entrepreneurs.

11. Farm to market roads length (presently 60,000 Km) should be expanded (to at least 350,000 Km) to improve farmers access to markets and existing roads renovated to improve their workability. The role of TEVTA and various other R & D institutions in agricultural marketing and post-harvest management need to be redefined. New institutions (e.g. Entrepreneurship Centre for Agribusiness and Rural Development, National Centre for Post-harvest Management and National Institute of Agricultural Marketing) should be established to cope with the emerging challenges confronted by agriculture in the context of dynamics of global changes and the requirements of WTO in the arena of International Trade.

12. There is dire need to strengthen and organize farming community on self-help basis. In this regard, Farmers organizations/cooperatives should be established with little intervention of influential external factors. Milk Procurement Models adopted by Nestle in Pakistan and AMUL in India offer sound principles for reorganizing Farmers organizations/ cooperatives in the country.

13. The current R & D system in agricultural marketing and Post-harvest management is weak and needs radical improvements. Private sector may be encouraged to initiate new R & D programs. Farmers, Agribusiness Entrepreneurs and other stakeholders should be involved in R & D planning and implementation programs. New agricultural ventures in the areas of floriculture, apiculture, packaging, value addition and diversification should be promoted on public- private partnership basis.

14. In summary, Pakistan needs a more dynamic, integrated and pro-active policy framework to rehabilitate the agricultural marketing system. There is strong need for commitment by the government, private sector and the stakeholders in the marketing system to adhere to the policy agendas of reforms, initiated by the government and continued on sustainable footings, for the welfare and betterment of farming community and consumers as well as the market players.

Chapter 1
Introduction

Agriculture is the most important sector of Pakistan's economy and is the single largest sector for economic growth and development. It contributes 21.8 percent in national Gross Domestic Product (GDP), provides employment to 44.7 percent of total labour force and contributes significantly in the export earnings (Government of Pakistan, 2009). Agriculture sector not only meets food demand of population but also provides raw material for industry besides providing surplus for exports. The growth of this sector witnessed many ups and downs in the recent past but the overall growth has remained satisfactory. This sector has great potential to support the national economy in future if due attention is given to solve emerging issues. The growth of agricultural sector heavily relies on the development of efficient and effective agricultural marketing system providing useful services to stakeholders.

Agricultural marketing system in Pakistan is characterized with numerous market players who perform their role in transferring farmer's produce to consumers in urban areas. It is observed that on an average, an agricultural commodity changes seven to eight different hands before reaching ultimate consumer (Mohy ud Din, 1998). Wholesale markets act as cardinal link between producers and consumers. These markets are operated both by public and private sectors. Despite variance in the size of such markets, there exists a relatively standardized model of transactions with precisely defined roles for key players in the supply chain and a largely uniform set of rules. In Pakistan, most fruits and vegetables markets are privately owned in the smaller towns and many cities, particularly in the NWFP. Mandi owners are characterized as commission agents who charge a fixed sum from the growers for usage of their facility and services. Wholesalers buy in lots through an auction conducted under the supervision of mandi owner or his designated lieutenant (sometimes called a Munshi). Having auctioned the goods, the mandi owner (Arti) pays off the growers after deducting his commission. The wholesaler (Pharia) then sells to individual retailers ranging from fruits and vegetables vendors to shopkeepers in retail markets. In bigger cities like Karachi and across the Punjab province, wholesale markets for fruits and vegetables are controlled by the Agricultural Marketing Department through market committees set up at the district level (Aftab, 2007).

Functions performed by middlemen in the wholesale markets have remained one of the most controversial issues in Pakistan's agricultural economy. It is generally argued that middlemen exploit marginal farmers and handicap them from their legitimate share. This allegation may not be ignored as many commission agents, bypassing the provisions of Agricultural Produce Market Acts, have been found charging higher commission rates than prescribed. Pre-harvest contractors dominate the marketing system of fruits in Pakistan. They are often allegedly labelled to over utilize their power. However, despite

all these allegations, importance and role performed by middlemen cannot be underestimated.

The performance of agricultural marketing system is generally judged by market margin approach which shows relative share of different stakeholders involved in the supply chain of agricultural commodities. It has been observed that share of farmer in consumer rupee is relatively low in case of perishable commodities as compared to non-perishables. In the case of fruits, pre-harvest contractors and retailers get more profit as compared to other stakeholders (Khushk and Sheikh, 2004). Vegetables and other agricultural commodities are no exception to above mentioned observation.

The share of different stakeholders in the marketing of fruits and vegetables is presented Tables 1.1 and 1.2.

Table 1.1: Marketing Margins and Producer's Share in Consumer Rupee for Various Fruits in Punjab (Percent)

Market Agency	Mango	Citrus	Date (Fresh)	Guava
Producer	20	20	37	15
Pre-harvest contractor	39	26	20	33
Commission Agent	6	2	6	5
Wholesaler	9	8	13	5
Retailer	26	44	24	42

Source: Khushk and Sheikh (2004)

Table 1.2: Marketing Margins and Producer's Share in Consumer Rupee for Various Vegetables in Punjab (Percent)

Market Agency		Potato		Onion		Tomato			Peas	Carrot	Brinjal
	Lodhi	UCL	Kokab & Smith	Kokab		Lodhi	UCL	Siddique	Lodhi	UCL	UCL
				A	B						
Grower	56.0	62.1	63.7	49.1	55.0	57.0	55.5	54.9	25.0	56.9	60.6
Commission Agent	-	8.5	11.3	1.5	1.7	7.8	3.4	-	9.0	6.9	-
Wholesaler (Pharia)	-	11.5	2.1	21.0	14.8	-	10.0	16.4	-	12.8	12.4
Retailer	-	17.9	22.9	23.4	28.5	-	26.7	25.3	-	21.3	20.1
Marketing margin	44.0	37.9	36.3	50.9	45.0	43.0	44.5	45.1	75.0	43.1	39.4

Note: A winter onion; B. Stored winter onion; - implies that details are not available.
Source: Chaudury and Ahmad, (2000)

Pakistan is a developing country and overtime agriculture has proved its central importance in uplifting and supporting the economy of the country but still its real potential needs to be realized. After independence, various governments took measures to improve agriculture sector, particularly on productivity enhancement, however, agricultural marketing remained a neglected area as little attention was paid to the development of marketing infrastructure and post harvest management of agricultural commodities.

Agricultural marketing infrastructure plays an important role in facilitating and ensuring smooth functioning of agricultural marketing system. An efficient logistic system is critically important for efficient performance of the marketing system. If the transport services are infrequent, of poor quality or expensive then farmers will be at a disadvantageous position in selling their crops as an expensive service will lead to low farm gate prices (the net price the farmer receives from selling his produce). Seasonally impassable roads or slow and infrequent transport services, coupled with poor storage, leads to enormous losses of many agricultural products, especially the perishables (milk, fresh vegetables and fruits) as they deteriorate quickly resulting in lower prices to farmers. As such, all weather roads play crucial role in enhancing market surplus for many of the agricultural products.

Improper post-harvest handling of agriculture produce in Pakistan results into quantitative and qualitative losses causing rise in consumer prices. These losses are

enormous particularly for perishables. Such losses cost billions, which if avoided can ensure abundant supply of food at all times. Post-harvest losses of cereals, fresh fruits and vegetables are the result of many disorders during the handling, packaging storage and transportation of the produce and infectious diseases, which vary greatly among commodities, production areas and seasons. Other reasons for losses include excessive or insufficient heat or cold, improper mixture of environmental gases (such as oxygen, carbon dioxide and humidity) and inadequate storage and transportation facilities. Further, the losses are caused by mechanical damages (such as bruising, cutting, excessive pooling or trimming). In the developed countries, the post harvest losses of agricultural commodities are nominal, whereas about 10-30 percent losses have been recorded in developing countries. However, world-wide post-harvest losses in the case of horticulture crops ranging between 30-35 percent are comparatively high (Hanif and Khan, 2004).

Out of total production of fruits and vegetables produced annually in Pakistan about 35-40 percent goes to waste, losses varying from 6 percent each in almond and walnuts, to more than 50 percent in case of cherry, mulberry and apricots. The post-harvest losses in food grains production are estimated to be between 8-12 percent ranging from 10 percent in wheat to 15 percent in rice. Similarly, other major crops like cotton and sugarcane are also exposed to significant post-harvest losses. In the case of fish, 10-15 percent of total catch goes to waste due to long voyage time and poor handling of fish catch on board (Hanif and Khan, 2004).

Food safety and security have become important issues particularly in the light of recent trade liberalization reforms under WTO. Compliance to national and international standards has become one of the most important requirements for achieving food safety and security. At present, the situation is not satisfactory in Pakistan as many processors and manufacturers do not possess the requisite know-how and the capacity to ensure food safety. As such, many entrepreneurs are unaware of requirements of the international markets in terms of hygiene and production management standards which make them ineligible to seek Hazard Analysis and Critical Control Points (HACCP) certification for food safety. This poses limits in the export of many products, especially to Europe and other quality conscious markets, creating an opportunity cost equal to the price differential that exists between high and low end consumer markets.

The recent food crisis and occasional surpluses and shortages of agricultural commodities underline the need for taking measures by the government to improve the working of agricultural marketing system. Poor farm to market roads, inefficient factor and product markets, volatile prices, consecutive shortages and hoarding, inefficient storage capacity, poor implementation of grades and standards are some of the prominent challenges which need to be tackled by the government and assigned top priority in the national plans.

It is against this backdrop that an attempt is made to understand the emerging issues confronting agricultural marketing and post harvest management system in Pakistan. The report is organized in five chapters. Chapter II outlines a brief review of the evolution of agricultural marketing infrastructure and post harvest management system in the context of various five years plans. Chapter III delineates the role of various institutions in the policy making and implementation process. It elaborates important commodity specific issues in the marketing of farm products and post harvest management practices. Chapter IV summarizes salient features of sanitary ad phytosanitary agreement of WTO and delineates impact of various SPS measures on the export of agricultural commodities from Pakistan and finally chapter V summarizes main findings and proposes policy measures for the improvement of marketing infrastructure and post harvest management system in the country.

Chapter 2

Evolution of Agricultural Marketing and Post Harvest Management System in Pakistan

This chapter seeks to delineate the evolution of agricultural marketing system in Pakistan primarily in the context of five year plans. Significant developments, challenges and weaknesses of agricultural marketing system during the process of its evolution are summarised in this chapter.

After independence of Pakistan, government laid emphasis on food production whereas distribution and marketing were generally assigned low priority. As such, development of agricultural marketing took place at a lower pace. The first five year plan (1955-60) identified many weaknesses in agricultural marketing system. Amongst others inefficiencies in the methods of buying and selling, assembling and processing, transportation of farm produce and utilization of market resources were the key factors affecting development of agricultural marketing system in the country. In order to cope with various challenges, some policy measures (proper implementation of grades and standards for agricultural commodities, grant of agricultural loans by Agricultural Development Bank (ADB) of Pakistan to farmers for the purchase of fertilizers, High Yielding Variety Seeds (HYV), farm implements and pesticides, training of stakeholders in post harvest management and grant of subsidy for construction of cold storages in different production areas etc.) were undertaken to ensure reasonable price to the stakeholders and improve efficiency of the agricultural marketing system in the country. Although government focused its attention in strengthening agricultural marketing system by bringing improvements in marketing infrastructure and post harvest management, note worthy progress was not achieved in the implementation of proposed measures.

The second (1960-65) and third (1965-70) five year plans underlined the need for removing various weaknesses (such as malpractices of middlemen, inefficient handling of produce during marketing, inadequate storage space, improper processing, non-compliance to standardization and grading, inadequate supply of packing material etc.) in the agricultural marketing system. Government adopted some measures to enhance efficiency of agricultural marketing on the recommendations given in the second and third five year plans. Some of the measures undertaken by the government for the rehabilitation of agricultural marketing in the country included promulgation of Weight and Measures Act in major areas of Pakistan, implementation of grades and standards for major exportable agricultural commodities and up-gradation and improvement of existing markets and development of new regulated agricultural markets under the provisions of Agricultural Produce Market Act of 1939.

The plans identified hoarding, price manipulations by the middlemen and insufficient supply of agricultural loans as some of the major impediments in the development of agricultural marketing system. High priority was assigned to overcome various obstacles in the system. Incentives were provided through grant of subsidies and by fixing floor prices of agricultural products and by strengthening the institutional framework for agricultural markets. Along with these measures, government approved Agricultural Produce Marketing Regulation Bill to envisage the newly emerged regulated markets. Despite these measures, lack of cold storages/warehouses for perishable commodities, improper grading and standardization, poor infrastructure (farm to market roads) continued to be the major obstacles in the smooth working of the agricultural marketing system in the country.

The policy measures of the government in 1970s' remained primarily focused on the evolution and implementation of support price mechanism and making necessary arrangements for export of agricultural products keeping in view the trends and requirements of international markets. Support price programs for food grains (wheat) were successfully implemented. Adequate machinery for procurement operations was provided and storage capacity for agricultural commodities, especially for food grains enhanced. In order to improve terms of trade, government increased export quotas and reduced import tariffs. The policy was further expanded to secure sanitary safeguards against the import of pesticides through provisions of Pesticides Act.

The fifth five year plan (1978-83) emphasized the need for strengthening market infrastructure. Based upon recommendations outlined in the plan, government undertook measures to develop market infrastructure and ensure timely availability of agricultural inputs (chemical fertilizers, pesticides and farm machinery) at reasonable prices and supplement imports when necessary. Pakistan Agricultural Storage and Services Corporation (PASSCO) were established in 1973 to ensure better returns to producers as well as reasonable prices to consumers. In addition, improved marketing and processing technology was adopted through collaboration between local entrepreneurs and reputed firms in the international markets. Some progress was witnessed in improving infrastructural facilities (such as grain silos, warehouses, cold storages, product quality testing laboratories, grading and primary processing plants, transportation system for handling and speedy clearance of perishable agricultural commodities etc.) Air-freight arrangements for promoting export of perishable products were improved. The development of food processing industry (through availability of cheap packing material and chemicals supported with other incentives such as packaging, tax concessions, import of machinery for modernization etc.) remained an important component of government policy. In short, agricultural marketing system received boost as a result of establishment of new processing plants, better procurement measures and improved transportation and distribution systems. Notwithstanding achievements, little progress was made in the construction of new storage facilities for major food grains and for perishable

commodities and in improving management skills of the stockholders/market functionaries.

The last decade of the century was characterized with government's focus in promoting and diversifying exports and ensuring price stability. This era witnessed the emergence of WTO and globalization of international trade. These developments changed dynamics and requirements of agriculture. Pakistan, like many other developing countries, had to undertake structural and institutional reforms to cope with the changing environment. As a result, government assigned priority to establish and develop various institutions for boosting exports of high value crops. Pakistan Horticulture Development and Export Board was created to develop the horticulture Sector and to boost exports of various horticultural commodities(e.g., mango, kinnow, apples, dates etc.) and to cope with the emerging challenges encountered in international trade due to implementation of various WTO agreements (e.g. AoA, SPS, TRIPS etc.). Export targets for various agricultural crops were not achieved due to poor compliance to the requirements of various developed countries.

The Medium Term Development Framework (MTDF) (2005-2010) advocated the policy of privatization, deregulation and market orientation for the domestic economy. The MTDF emphasized development, expansion and diversification of market base. Efforts were made to encourage public and private investments through tax reforms and financial liberalization in order to improve efficiency of the agricultural marketing system. Although measures have been undertaken to improve the performance of agricultural marketing system, insufficient availability of institutional credit, especially marketing credit, high post harvest losses due to poor adoption of post harvest management practices, poor implementation and adoption of standards and grades and lesser compliance to global requirements of various WTO agreements continue to effect the working of agricultural marketing system in the country. Establishment of new regulated markets, provisions of agricultural inputs to stakeholders at reasonable prices, compliance to grades and standards by stakeholders are however priority areas of the government policy. Existing marketing infrastructure is incapable to cope with the emerging challenges of globalization and to meet the growing demand of food grains, fruits, vegetables, livestock, poultry and their products both in the domestic as well as international markets. Recent food crisis in Pakistan (shortage of wheat flour and sugar) has highlighted various inadequacies and inefficiencies in the agricultural marketing system. There is a strong need for chalking out comprehensive policy for marketing infrastructure and post harvest management to face emerging challenges to agriculture and meet growing and diversified food needs of population.

Chapter No. 3

Agricultural Marketing Infrastructure and Post Harvest Management: Present Status and Challenges

Significant improvements in the agricultural marketing infrastructure have been made but the intermittent food crises point out that existing agricultural marketing system in Pakistan needs to be rehabilitated and revamped to meet emerging challenges of food security. The food grains markets, storage houses, transportation of perishable produce, food processing plants etc are inadequate and existing marketing facilities fall short of the requirements of modern agriculture. Small farmers and other stakeholders in agriculture do not have sufficient finance to supply their produce in the regional markets of big cities.

Due to lack of proper marketing infrastructure and poor post harvest management, profitability of stakeholders, particularly the growers, has greatly been compromised. Poor staying ability and cash starvation compel the farmers to sell their produce at throw away prices either to the middlemen or other market functionaries. Post harvest losses for non perishables, particularly cereals, range between 15-20 percent while for perishable crops these losses range between 20-40 percent. A large quantity of produce is wasted causing huge losses, which if saved, could meet the demand for large section of growing population. The main reasons for such losses are lack of awareness among growers and other stakeholders, non availability of required facilities/tools and lack of transfer of technology etc.

Agricultural marketing and post harvest management did not receive due attention of policy makers in the past. As such, meagre funds were allocated for bringing improvements in the agricultural marketing system and related institutions. Consequently, agricultural marketing infrastructure and various institutional arrangements could not develop to handle occasional surpluses and shortages of agricultural commodities. There have been cycles of food crises leading to welfare loss of society due to high volatility in the prices of agricultural commodities.

This chapter seeks to elaborate important commodity specific issues in the marketing of farm products and their post-harvest management. The chapter is organized in two sections. Sections I summarizes legal and institutional arrangements of agricultural marketing system. It describes operations of various public sector institutions supporting agricultural marketing system in the country. Section II describes various commodity specific marketing arrangements and summarizes major issues in the marketing of food grains, cash crops, pulses, horticultural crops, livestock, poultry and fish.

3.1 Agricultural Marketing: Legal and Institutional Arrangements

Agriculture is a provincial subject and the provincial governments are responsible for enacting legal and institutional arrangements. The federal and provincial governments however, frame policies for the development of agricultural marketing system at federal and provincial levels.

The legal framework for agricultural marketing system in Pakistan has developed over time. The Agriculture Produce Markets Act, 1939 was promulgated on the recommendations of Royal commission on Agriculture, constituted by the British India Government during 1927 with the objective to regulate Agribusiness and to do away the evils and vices inherent in the agricultural marketing system. Market Committees were established under the provisions of this act and assigned the task of safeguarding interests of growers. After independence, the same act was implemented in Pakistan.

The Act of 1939 was replaced by the Punjab Agricultural Produce Markets Ordinance, 1978. The rules to regulate working of the wholesale markets were however framed during 1979. All agricultural marketing activities (especially the working of wholesale markets) in the province of Punjab are legally controlled under this ordinance. Two hundred and forty four Agricultural Markets along with eighty one feeder markets handle food grains, fruits and vegetables in Punjab. Grading and quality certification in the domestic markets is legally controlled under the Punjab Agricultural Produce Grading and Marking Act 1972 (Government of Punjab, 2006a).

Government established various institutions for streamlining working of agricultural marketing system in the country. Institutions supporting agricultural marketing system in Pakistan operate both at federal as well as provincial levels. At federal level, Agricultural Policy Institute (API), previously known as Agricultural prices commission (APCOM) chalks out domestic and international sectoral/commodity-specific policies, examines and evaluates production, processing, storage, and marketing costs of agricultural and livestock commodities. The main task of Agricultural Policy Institute is to formulate agricultural policies including those on agricultural prices, marketing and export competitiveness of agricultural Products.

The mandate for ensuring quality and grading assurance in the domestic market is entrusted with the Department of Agricultural and Livestock Product Marketing and Grading (DALPMG), working under the Ministry of Food and Agriculture (MINFA). This department (DALPMG) advises the federal government on all matters relating to setting/implementation of grades and Standards of agricultural and livestock products for both the domestic and export markets. It also provides guidance to the provinces on various aspects of marketing (especially grading and standardization of agricultural commodities) and coordinates provincial activities at the national level.

Pakistan Horticulture Development & Export Board, renamed as Pakistan Horticulture Development and Export Company (PHDEC), was established by the federal government under Ministry of Commerce to tackle domestic and export marketing issues in the field of horticulture in Pakistan. PHDEC is managed by a Board of Management from the public and private sectors. Pakistan Horticulture Development and Export Company was created for channelising enormous potential of Pakistan's horticultural products in the global market. In the absence of single ministry or institution responsible for the development of horticulture value chain at various levels, it was considered important to set-up PHDEB to uplift this sector, especially in the light of impact of globalization and WTO regime. The Board has played pivotal role in boosting export of various horticultural products (mango, kinnow, apples, dates etc) and important vegetables in the markets of many developed countries.

Agribusiness Development and Diversification Project was established by Government of Pakistan to promote and develop various agribusinesses and to add value to various agricultural products, diversify the cropping pattern and impart training to stakeholders on skill development, management and entrepreneurship. The Project works in collaboration with the Ministry of Food and Agriculture (MINFA) and the Asian Development Bank. The main objective of this project is to use agribusiness sector to support economic growth and employment generation. This is achieved by making agriculture sector more competitive and dynamic. Agribusiness project aims at solving the problems that obstruct the development of agribusinesses in Pakistan. The project helps the stakeholders in discovering and making use of domestic and export opportunities. An Agribusiness Support Fund has been created and is an integral component of Agribusiness Development and Diversification Project.

Agribusiness Support Fund (ASF) is a 'not-for-profit company' established by Ministry of Food and Agriculture (MINFA) with the support of the Asian Development Bank (ADB). ASF provides funds on matching grant basis (non-returnable) for Business Development Services to individuals and firms engaged in agricultural related businesses, enabling them to employ modern techniques and practices and build within themselves different skills, know-how, expertise and market understanding required by a fast-changing economic environment and to improve their productivity, profitability, competitiveness and creditworthiness.

Given the importance of livestock sector in the economy, Government of Pakistan has also established Livestock and Dairy Development Board (LDDB). Livestock and Dairy Development Board (LDDB) is organized as a private sector led 'not-for-profit' company which mainly operates in the area of livestock and dairy development in Pakistan. Major initiatives undertaken by the Board include milk collection and dairy development programs, livestock and meat production, food security and productivity enhancement of small farmers.

The provincial governments have also entrusted the task of developing agricultural marketing system to various organizations/institutions. In Punjab for instance, agricultural marketing is managed by the Directorate of Economics and Marketing, working under the Department of Agricultural Marketing. The Food Department procures agricultural commodities (especially wheat) from farmers at a price announced by the federal Government.

Punjab Agricultural Marketing Company (PAMCO) has been established by the Government of Punjab under the Public-Private initiative to energize agribusiness and marketing in Punjab. The major areas of interest of this organization include development of integrated cold storage chains, enhancing and improving processing and marketing of agricultural commodities. PAMCO works in the field of fruits and vegetables, poultry, livestock, dairy, fisheries, floriculture and facilitates stakeholders in getting certificates (e.g. EurepGAP, Global GAP etc.) for the export of agricultural commodities.

Punjab Institute of Agricultural Marketing (PIAM) was established in 2006 with the mandate to impart training to stakeholders and suggesting policy recommendations for improving agricultural marketing system in the Punjab.

3.2 Commodity Specific Marketing Arrangements and Issues

The agricultural marketing system in Pakistan is fairly diversified. Both the private and public sectors are involved in the marketing of farm produce. Private sector enterprises operate freely in buying and selling of many agricultural commodities. Farmers bring their produce in the markets themselves or through market intermediaries where buying and selling of these commodities takes place on demand and supply equation. Private sector has full command to determine prices of coarse grains, fruits, vegetables, milk, eggs, etc. Local market administration fixes prices for major agricultural products on regular basis. Marketing of some food grains and cash crops (for example, wheat, rice, maize, sugarcane and cotton) is managed and controlled by the public sector. Government intervenes in the marketing system through fixation of floor prices, procurement quotas and prices, export quotas, regulation and control of markets etc.

3.2.1 Food Grains

The important food grains in Pakistan are wheat and rice. In 2007-08, total area under these crops (wheat and rice) was 11065.2 thousand hectares and total production was 26522.2 thousand tonnes. Government intervention in the procurement and distribution of wheat is however sizeable. Generally, government purchases one third of the wheat produced in the country. This exerts greater pressure on government storage facilities which is inadequate and also not up to the mark. Consequently, losses occur during the storage process.

a) Wheat

Wheat is the main staple food crop of population and largest grain crop of the country. It contributes 13.1 percent to the value added in agriculture and 2.8 percent to GDP. Wheat has significant importance in Pakistan's food economy, both in terms of production and consumption (Government of Pakistan, 2009). Most farmers in the country grow wheat. Although per-acre yield of wheat and its total production has increased significantly in the recent past, Pakistan is still marginally self-sufficient in wheat.

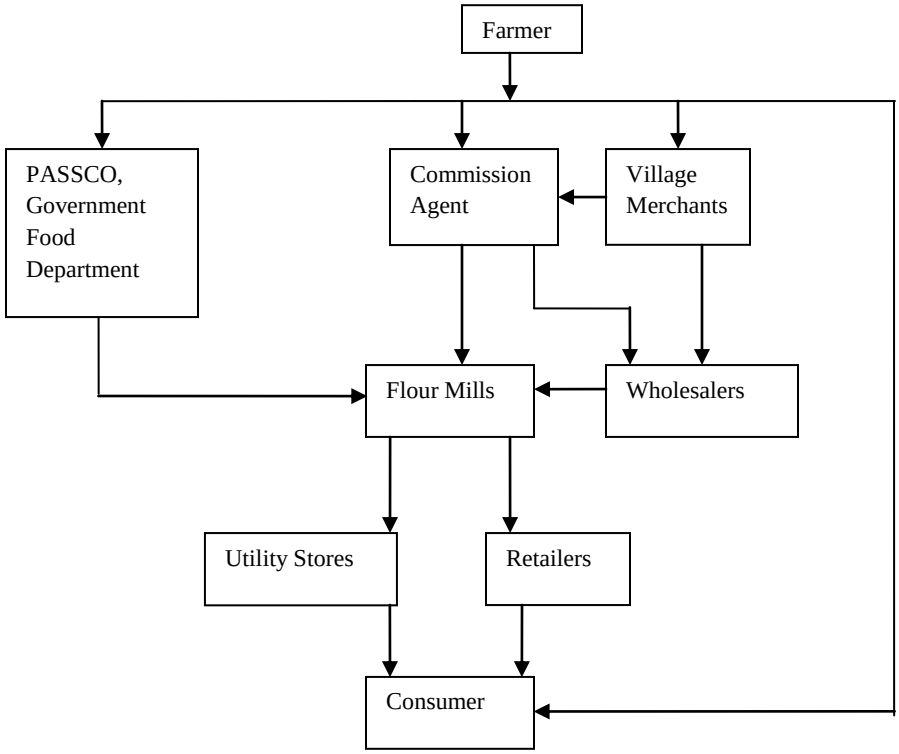
In the current system of wheat marketing, public sector and private traders coexist. Although deregulation policies in wheat marketing have been implemented since mid-1980s, public intervention remains important. Government procures wheat from producers directly; it also releases wheat flour to consumers directly through utility stores owned by a government corporation or indirectly through private markets. The price of wheat through this route is fixed by the federal government pan-territorially. The provincial food departments and the Pakistan Agricultural Storage and Services Corporation (PASSCO) procure wheat from farmers in harvest months at the support price announced by the government.

Table 3.1: Production and Availability of Wheat in Pakistan ('000' tonnes)

Sr. No.	Production/Availability	2005-06	2006-07	2007-08
1.	Production	21612	21277	23295
2.	Deduction for seed, feed and wastage @ of 10 percent	2161	2128	2330
3.	Import	815	133	1700
4.	Export	-	518	500
5.	Government procurement	4515	4422	5000
6.	Off-take from Government stocks	4000	5000	4000
7.	Available with private sector	14465	13751	15465
8.	Net availability (6+7)	18465	18751	19445
9.	Population (million)	154.00	156.77	160.40
10.	Per capita availability(kg/annum)	119.9	119.61	121.35

Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08, Ministry of Food and Agriculture (Economic Wing), Islamabad.

Figure 3.1: Marketing Channel of Wheat



The private sector purchases wheat from farmers at the prevailing market price. Generally price paid by the private sector to farmers is less than the support price announced by the government, especially during the surplus regime. Instead of bringing directly to public procurement centres, most farmers sell wheat to middlemen such as village shopkeepers and beoparis (village brokers). These traders sell wheat to the public procurement centres or to other private traders (Kurosaki, 1996).

Farmers and middlemen bring wheat in the food grain markets and sell through arhtis (commission agents) who are registered in the Market Committee. The artis collect wheat from growers and primary middlemen and deliver it to millers and wholesalers. The producer's share in the sale price of wheat varies from 90 to 95 percent (Government of Punjab, 2006b).

Occasional surpluses and shortages and subsequently inadequate marketing infrastructure particularly storage facilities, are the key policy issues that need immediate policy attention. Since wheat market is influenced by government intervention, procurement

centres are far less in number than the requirement. On consumer side, adequate availability of good quality wheat at affordable prices is a major problem.

One of the weakest spots in the wheat distribution system is lack of efficient and high quality storage facilities. Public storage capacity for wheat is 4.3 million tonnes whereas this year (2008-09) government procured around 9 million tonnes. Lack of proper storage facilities during harvest periods end in sharp price fluctuations. Private storage is inadequate both in terms of quantity and quality to compensate for inadequate storage capacity in the public sector that has not expanded over time to handle surplus situation.

Wheat post harvest loss management also constitutes a serious challenge that needs policy attention. Chaudhary (1980) reported that enormous losses occurred during harvesting, threshing, cleaning, drying, milling, storage, processing, cooking and consumption of wheat. According to him, aggregate losses during various post harvest operations in Pakistan are around 15.3 percent of total production.

Many factors are responsible for weight loss during storage which include evaporation and absorption of moisture by grain, temperature, rainfall, insects, rodents, birds, moulds, condition of grain at the time of storage and length of storage period. Of all these, the major loss causing agents are the insects and their attack is directly related to moisture content and type of storage structure.

Table 3.2: Aggregate Losses of Food Grains at Post-Harvest Level (percent)

Province	Wheat	Rice	Maize
Punjab	13.78	15.27	10.53
Sindh	15.69	18.41	4.74
NWFP	14.78	15.37	11.68
Balochistan	15.60	10.69	0.02
PAKISTAN			
Losses (%)	15.37	17.18	12.70

Source: Chaudhry, M.A. 1980. Aggregate Post-Harvest Food Grain Losses in Pakistan. Vol. VI. Deptt. of Agri. Marketing U.A., Faisalabad.

At farm level, the storage consists of mud bins, metallic bins, concrete rooms, jute bags and wooden boxes. Whole sellers also practice open storage by putting bagged grain on plinth, which is covered with tarpaulin for protection. Storage owned by flour millers is for operational stock only (Baloch and Irshad, 1986).

Table 3.3: Estimates of Public Sector Wheat Storage Losses

Provinces	Average Storage Period(Months)	Percent Loss			
Sindh	6.4	0.1	2.9	0.3	**3.3**
Punjab	6.3	0.1	1.8	0.3	**2.2**
NWFP	6.5	2.9	2.6	0.7	**6.2**
Balochistan	**2.6**	**0.5**	**1.2**	**0.5**	**2.2**

Source: Baloch, UK, M. Irshad & M. Naeemullah. Storage losses in wheat in Pakistan. Report on Integrated Pest Management, FAO and PARC, 1992.

b) Rice

Rice is an important staple food in Pakistan. It accounts for 5.9 percent of value added in agriculture and 1.3 percent in GDP. Pakistan grows high quality rice to meet both domestic and export demand. Per capita availability of rice in Pakistan is 13.38 Kgs/annum (Government of Pakistan, 2009). Due to aroma and superior quality, Pakistani rice is valuable in international market. Pakistan contributes significant share in global rice exports and holds almost monopoly in the export of aromatic basmati rice, which fetches three to four times higher prices than other rice varieties of the world.

Table 3.4: Production, Export and Domestic Availability of Rice in Pakistan

('000' tonnes)

Sr. No.	Production and Availability	2005-06	2006-07	2007-08
1.	Local production	5547	5438	5561
2.	Deduction for seed & wastage @ 6 percent	333	326	334
3.	Procurement by the Government	-	-	-
4.	Exports	2891	3089	3129
5.	Net availability	2323	2023	2098
6.	Per capita availability (Kgs/annum)	15.08	12.90	13.38

Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08. Ministry of Food and Agriculture (Economic Wing), Islamabad.

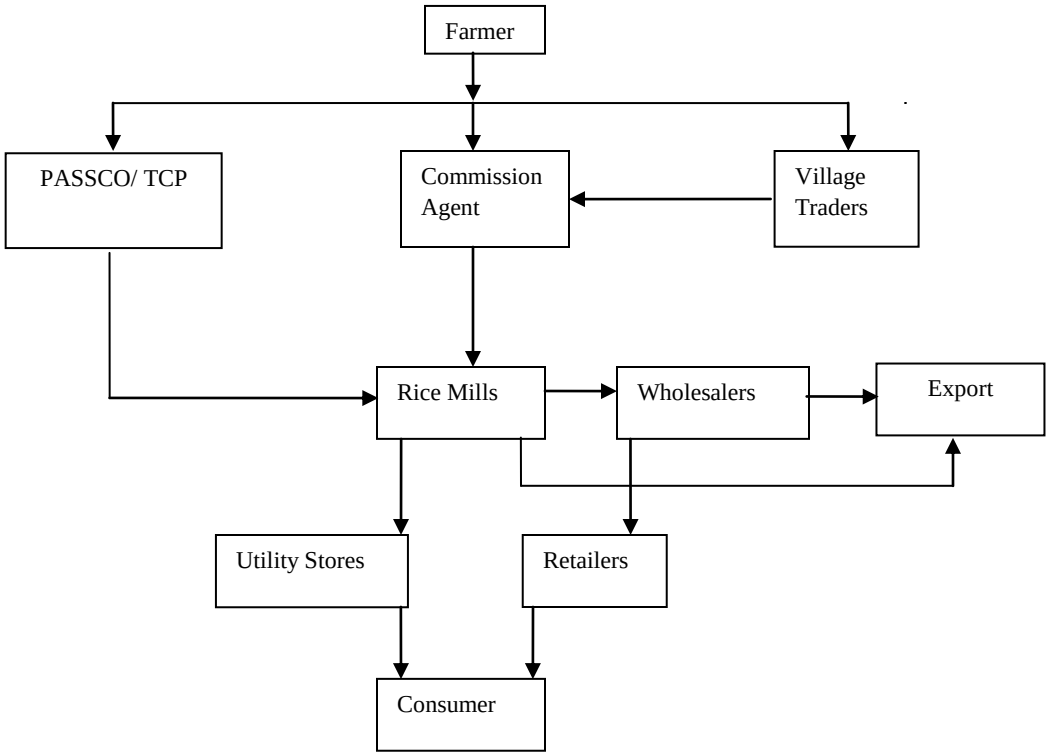
Basmati rice is produced in Punjab and is one of the most important export commodities of Pakistan. Until 1987/88, export of Basmati rice was a public monopoly. A parastatal corporation, Rice Export Corporation of Pakistan (RECP), procured cleaned rice from private rice millers and middlemen at the support price fixed by the federal government. Since 1987/88, deregulation has been proceeding rather well in rice export. Especially,

fiscal year 1990-91 witnessed a dramatic change, when share of private sector in Basmati export increased rapidly from almost nil to more than one-third. The federal government announces support price for paddy in the same manner as for wheat. PASSCO and Trading Corporation of Pakistan are entrusted with the responsibility for stabilizing paddy price.

Between growers and millers, various middlemen exist: growers may sell through commission agents (artis) or village brokers (beoparis) on commission basis; sell to the agents of rice millers; or sell to village traders. The role of artis is as important in trade as is in the wheat marketing.

Domestically, sharp fluctuations in rice price and inadequate storage facilities are the main issues. Due to unavailability of drying and storage facilities at the farm level, the head rice yield in Pakistan is about 30 to 40 percent as against most of the South-East Asian countries which have achieved head rice yields up to 55 percent (Tabassum *et al*., 1989).

Figure 3.2: Marketing Channel of Rice



Rice exports from Pakistan are generally affected due to improper branding, poor packaging and non-compliance to SPS measures. Absence of accredited labs for testing and certification also hamper export of rice from Pakistan to many developed countries.

3.2.2 Cash Crops

Cotton and sugarcane are the major cash crops in Pakistan besides tobacco, jute, and sugar beet. Total production of cash crops in 2007-08 was 75868 thousand tonnes with an area of 4512 thousand hectares (Table 3.5).

Table 3.5: Area and Production of Cash Crops in Pakistan

Year	Area ('000' hectares)	Production ('000' tonnes)
2005-06	4200	47185
2006-07	4320	57236
2007-08	4512	75868

Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08, Ministry of Food and Agriculture (Economic Wing), Islamabad.

a) Cotton

Cotton is lifeline of the economy of Pakistan. As a cash crop, cotton is a significant source of foreign exchange earnings. Cotton accounts for 7.3 percent of the value added in agriculture and about 1.6 percent to GDP (Government of Pakistan, 2009).

Table 3.6: Production of Cotton in Pakistan ('000' bales)

Year	Production
2005-06	13018.9
2006-07	12856.2
2007-08	11655.1

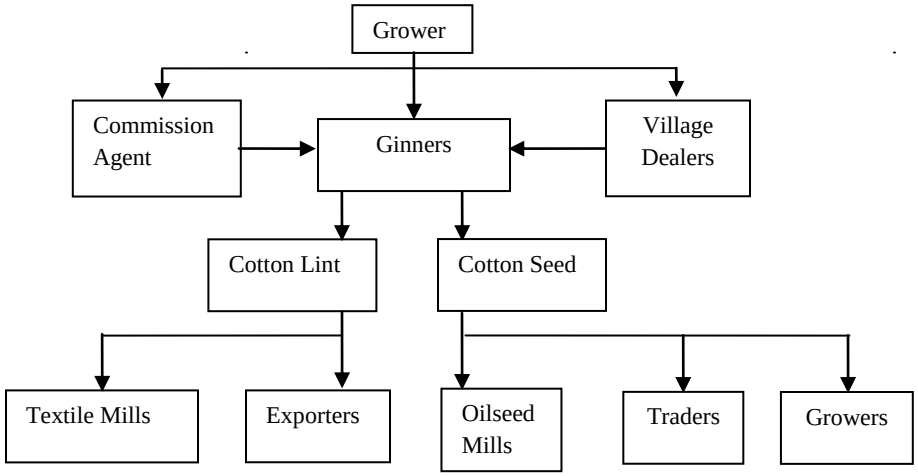
Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08, Ministry of Food and Agriculture (Economic Wing), Islamabad.

Cotton is marketed through three principal operators in Pakistan: grower, village dealer or commission agents and cotton ginners. Cotton is sold by growers to village dealers and commission agents who then sell it to cotton ginners. A small number of growers having larger land holdings sell directly to the cotton ginners. The commission agent, who assembles quantities of cotton, sells directly to factories. On the other hand, village dealer is a less significant operator in terms of volume of trade.

Cotton ginning factories are located throughout the main production zone. These factories process cotton into cotton lint and cotton seed. The brokers purchase cotton lint from ginners. Either ginners sell lint to spinners located in large urban areas such as Multan,

Faisalabad, Karachi, or sell it to exporters. Brokers act as bridge between ginners and oilseed factories for marketing of cotton seed that produce cotton seed oil and seed cake. A small percentage of seed is sometimes sold to large growers for planting.

Figure 3.3: Marketing Channel of Cotton



Fluctuating domestic and international cotton prices are the major problems. Besides prices, cotton contamination and quality related problems are main issues in its marketing.

Despite notable increase in cotton production over the years, unsuitable picking methods, adulteration of seed cotton with water and foreign matter, mixed seed and mixed grades have reduced the quality of seed cotton. These factors, coupled with inappropriate ginning techniques, have downgraded the lint quality. According to one estimate, the country has been losing some 10-15 percent of the commercial value of its cotton. The core of the problem facing the country's cotton industry is the absence of a recognized and scientifically devised standardization system.

b) Sugarcane

In Pakistan, sugarcane is mainly grown for sugar although many other by-products are obtained from it. Sugarcane generates income and employment to the farming community of the country. Its share in value added of agriculture and GDP are 3.4 percent and 0.7 percent respectively (Government of Pakistan, 2009).

Table 3.7: Production of Sugarcane and Sugar in Pakistan

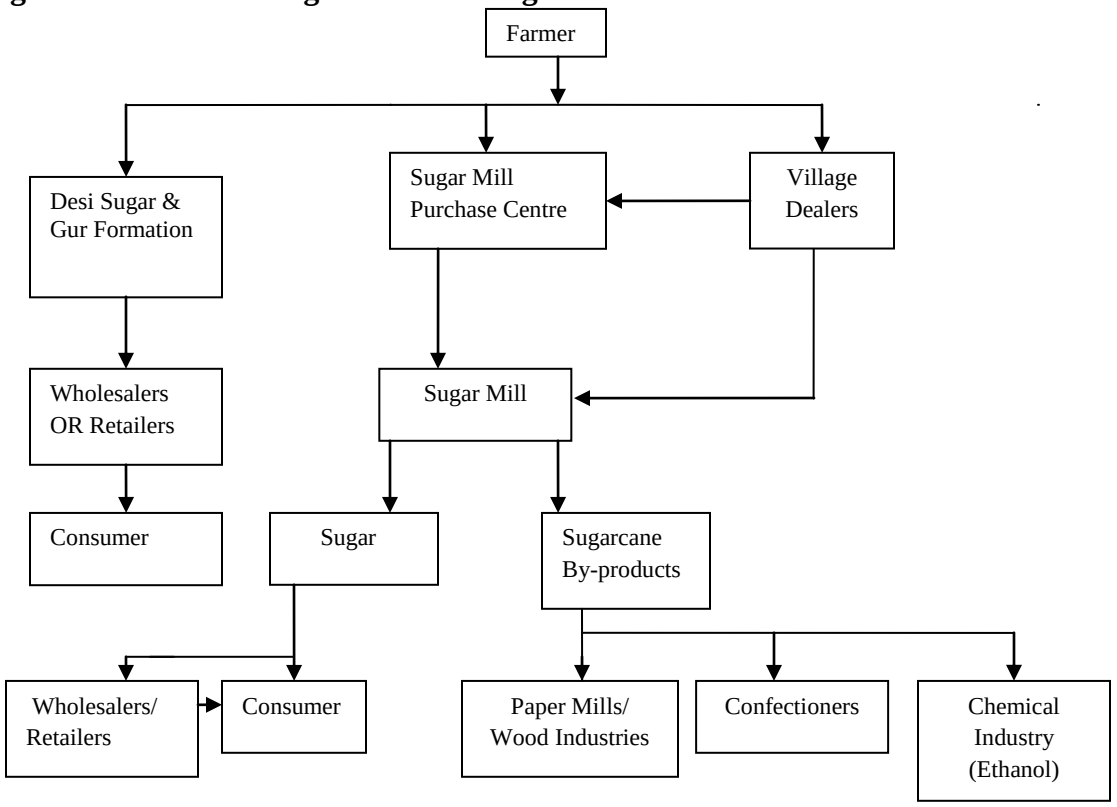
Year	No. of Mills	Cane Production (Mill. tonnes)	Cane Crushed (Mill. tonnes)	Sugar Produced ('000' tonnes)	Recovery percentage from cane
2005-06	74	44.66	30.09	2587	8.6
2006-07	79	54.75	40.49	3516	8.7
2007-08	79	63.92	52.75	4740	9.0

Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08. Islamabad. Ministry of Food and Agriculture (Economic Wing), Islamabad.

Farmers, sugar mills and commission agents are involved in the marketing of sugarcane. Sugar mills establish their purchase centres in the surrounding areas of their territory. Commission agents purchase sugarcane from the field or at the centre. Some farmers sell directly to the sugar mills. After processing of sugarcane, sugar is sold to consumers both through public sector managed utility stores and the private sector. By-products obtained during the process of extracting and refining sugar are provided to paper mills and confectioners. A small number of farmers produce "Gur" and "Desi Sugar" from sugarcane and sell it to brokers in the market.

Amongst others, underweighting of sugarcane at purchase centres and mill gates, undue deductions by mills up to 10 percent, delays in payments, exploitation of growers by the middleman, are the main issues in its marketing. Sugar mills use various tactics to exploit farmers. Growers demand higher price for their raw material whereas millers complain about increase in the production cost due to import of relevant machinery. Late crushing causes dissatisfaction as well as financial loss to both the farmers and millers. Other problems are stagnant cane yields, non-payment of dues to growers by mills, and low import parity prices. Inadequate agricultural infrastructure and vague government sugar policy along with unfair trade practices are some other problems that aggravate the problems faced both by the stakeholders.

Figure 3.4: Marketing Channel of Sugarcane



3.2.3 Pulses

Pulses occupy pivotal position in the food items consumed by large number of population in the country. These are important source of protein and other nutrients. Pulses are cultivated on about five percent of the total cropped area. Major pulses grown in the country are gram, masoor, mung and mash. Net availability of pulses is far less than their domestic requirements. As such, Pakistan has to import substantial quantities of pulses to fulfil needs of the population. Per capita availability of pulses is about 7.94 kg/annum (Government of Pakistan, 2008).

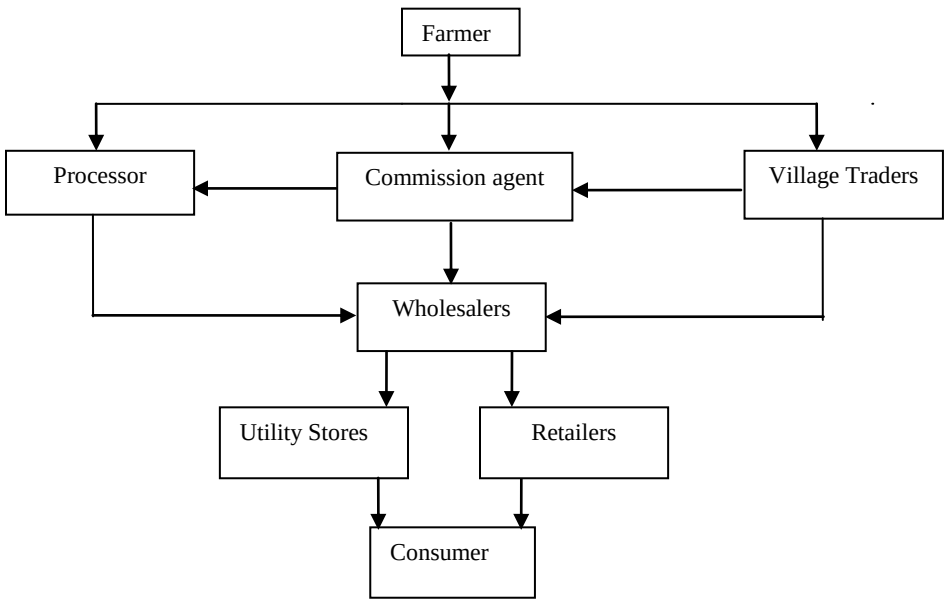
Table 3.8: Production and Availability of Pulses in Pakistan ('000' tonnes)

Sr. No.	Production and Availability	2005-06	2006-07	2007-08
1	Local production			
	(a) Gram	868	480	838
	(b) Other Pulses	205	250	275
2	Deduction for seed, feed & wastage			
	(a) Gram at the rate of 31%	269	149	260
	(b) Other pulses at the rate of 11%	23	22	29
3	Imports	479	521	450
4	Net availability of Pulses	1260	1075	1274
5	Per capita availability (Kg/annum)	8.18	6.86	7.94

Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08. Ministry of Food and Agriculture (Economic Wing), Islamabad.

Middleman is an important functionary in the marketing channel of pulses. The growers sell their produce to the middleman (local traders or commission agents) in the rural areas. The commission agents generally sell the crop to wholesalers in the urban areas. Some pulses are however processed by 'Dal Mills' before passing on to wholesalers in the market. Wholesalers clean and then sell it to retailers.

Figure 3.5: Marketing Channel of Pulses



Sharp fluctuations in the price and inadequate storage facilities are main issues. Due to unavailability of drying and storage facilities at farm level, major portion of the produce goes waste. Absence of government institutions dealing with the marketing,

standardisation and pricing affects efficient marketing of pulses. Wholesale markets do not have requisite infrastructure facilities, which further affect quality of the produce. As such, processing facilities are not up to the mark and result in post harvest losses (Arifeen, 2009).

3.2.4 Horticultural Crops

Horticultural crops constitute an important component of agricultural economy in Pakistan. Horticultural products have great demand both at national and international levels which enhances their potential and scope. Citrus, mango, apple, guava and dates are some of the famous fruits produced in Pakistan whereas a vast range of summer and winter vegetables are also grown and are an important farming activity.

Table 3.9: Production of Fruits and Vegetables in Pakistan (000 Tonnes)

Year	Vegetables	Fruits
2005-06	3124.8	7147.6
2006-07	3138.0	6011.3
2007-08	3136.8	7178.8

Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08, Ministry of Food and Agriculture (Economic Wing), Islamabad.

Pre-harvest contractor is one of the important market functionaries for horticultural products. Marketing of fruits and vegetables starts with the involvement of pre-harvest contractor who buys entire orchards at blossom. Harvesting, grading, packing, and then transportation to the wholesale markets are some of the main services performed by the pre-harvest contractor. He also performs some functions such as spraying, orchard management, picking and assembling of the produce. The pre-harvest contractor is considered as the kingpin in the physical movement of fruits from orchards to wholesale markets.

Village merchants (Beoparis) collect produce from a large number of dispersed small holders, bulk it and transport it to wholesale markets. Commission Agents (Artis) are other important market functionaries of fruits and vegetable marketing system of Pakistan. They have permanent place of business in the wholesale fruits and vegetables markets, act on behalf of sellers and arrange auctions. Commission rate/fee charged by commission agents ranges between 6 to 10 percent for various by-products. Wholesalers (Pharias) purchase produce from the commission agents normally in auction and sell to retailers (i.e. shopkeepers and carriers). They also grade and repack the produce. Generally, there types of retailers (shopkeepers, carriers and small pharias) operate in the market.

Figure 3.6: Marketing Channel of Fruits

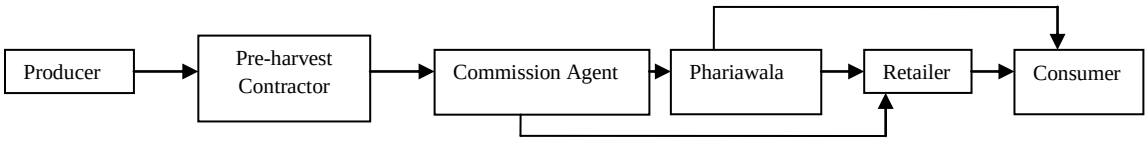
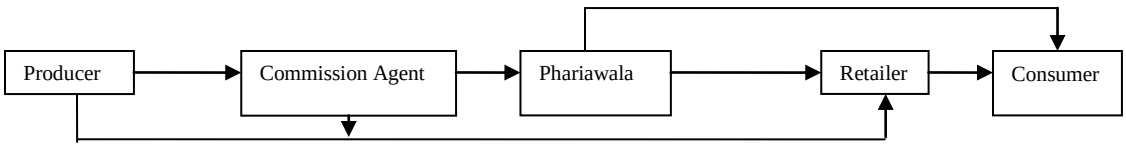


Figure 3.7: Marketing Channel of Vegetables



a) Citrus

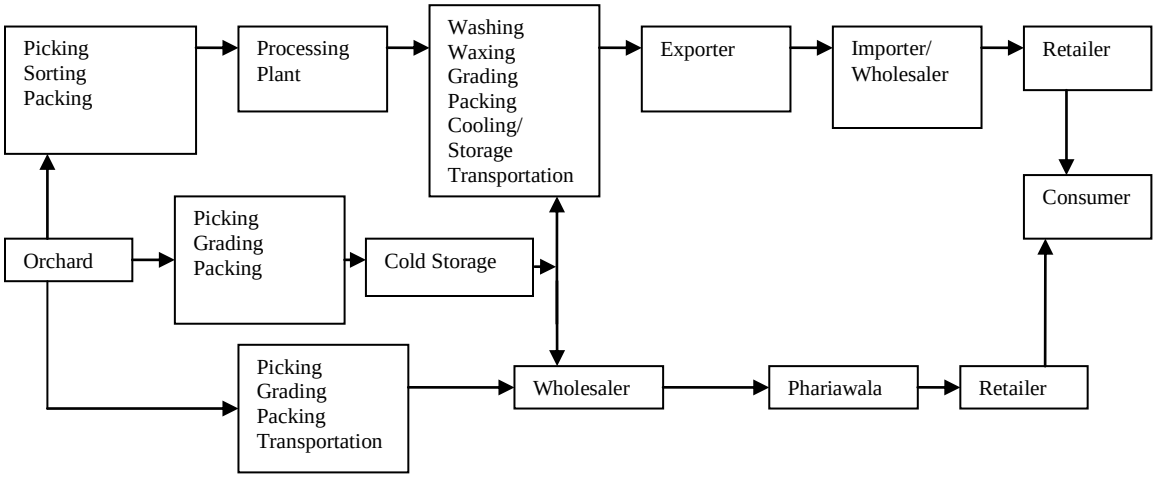
Citrus fruits are one of the most important tree fruit crops in the world. These are consumed direct as a fruit as well as a juice (fresh & concentrates). Citrus fruits include oranges, mandarins (Kinnow), grapefruit and limes, of which mandarins (Kinnow) receives significant importance in Pakistan. Kinnow is a cross between 'King' & 'Willow-leaf' species of Citrus Fruit, successfully experimented at the Citrus Research Centre, University of California, Riverside, USA (1915-1935). Both of these parents have Indo-China origins. The soil and climatic conditions in Pakistan have given 'Kinnow' a unique flavour which distinguishes it from other comparable cultivars (mandarins) grown in the World.

Like other fruits, citrus fruit trade is with the private sector. However, Government facilitates the system by providing physical infrastructure especially the wholesale markets & communication, market intelligence, market promotion and regulatory measures for smooth business operations. It is generally perceived that marketing agents exploit producers and consumers by charging a fixed and high margin on their investment (Ali, 2000).

Pre-harvest contractor is the first intermediary in the marketing channel of Citrus. He purchases the contract of an orchard on annual basis after estimating possible returns from the orchard. Commission agent who works in the market has close ties with contractors and producers. He is often assumed to perform a dominating role which sometimes is exploitative in nature. In the citrus marketing and its export, an important link is processor. Facilities for the export of citrus are quite developed. The major

impeding factor at the export level is however the costly import of material used in the processing of citrus.

Figure 3.8: Marketing Channel of Citrus



It may be mentioned that large differences are recorded between prices paid by consumers and those received by producers (Khan, 1980 and Mohy-ud-Din, 1991). The major problems in the marketing of horticultural crops (including citrus) are inter- and intra-seasonal fluctuations in prices (Aujla and Jagirani, 2002). In addition, wholesale markets for the fruit presents a gloomy picture. Physical market infrastructure is in its bad condition. Auction platforms, roads, storage and shops are in poor condition. Sanitation and unhealthy environment surrounds the market. Rainy weather and days worsen the situation. Illegal encroachments, business without license, and traffic problems affect the marketing efficiency. The implications are that market intermediaries work in a high risks and high transaction costs environment, which is worsened by poor security, a dis-functional legal system for the enforcement of agreements and widespread corruption (Aujla *et al*., 2007).

The world trade in citrus fruits is continuously growing. The prominent citrus exporting countries include China, Pakistan, Spain, Turkey and Morocco. This has directly impacted export of citrus from Pakistan which steadily increased over the past 5 years. Export of kinnow alone contributes about 97 percent in the total export of citrus from the country. The kinnow exports are mainly directed to Dubai, Iran, Russia, European Union, Philippines, Afghanistan, Sri Lanka and some South East Asian countries. The regional distribution of exports reveals that almost 60 percent of the total exports are directed to Middle East/Gulf countries whereas Far Eastern and the European countries are other prominent markets (PHDEB, 2005a).

The consumption of oranges and mandarins as fresh fruit is declining in the developed countries. There are two reasons for this decline. First, it is being replaced by orange juice not from concentrates. Second, with the advances in transportation and storage, fresh citrus now faces more competition from other fruits such as banana, grapes and strawberries. On the other hand and contrary to the developed world, consumption of citrus in many developing countries including India, Mexico, Argentina and Brazil is expanding. For Pakistan, Eastern European countries may emerge as potential market for citrus. In some countries including Russian Federation & Ukraine Pakistan has already made an entry.

The consumer looks for convenient fruit and hence prefers seedless 'mandarins' or 'oranges'. Therefore, efforts to produce seedless mandarins (kinnow) if succeed, can open up new vistas for export of this fruit in the international market.

The trend in the marketing of citrus (kinnow) is towards fewer and larger processors and handlers. Farmers, too, are becoming fewer and larger, but their size and power in the market place remain small in comparison with processor/handlers. Pack house facilities are available but not sufficient enough to handle marketable surplus for export purposes. However, most of the time growers operate in the buyers market because supply of the produce is in abundance. Both the growers and exporters have to keep pace with the changing market requirements. The best chance to make a profit for the growers is to meet market requirements.

Most of the companies in the citrus processing sector are in the small-sized category. As such economies of scale are difficult to attain in storage and transportation, the situation favours a service provider to whom these companies can outsource their storage and transport functions.

The world market is continually making higher demands for presentation, greater shelf life and uniform grading of the fruit and demands more competitive commercial conditions including prices. There is generally a large price differential between good, average, and poor quality fruit on the domestic as well as in the export markets. Customers are becoming increasingly selective for high quality fruit.

Due to poor production practices, poor cold storage facilities and inadequate research on their impact on marketability of the fruit, a substantial portion of the produce is rejected being unfit for export. This directly increases cost and renders produce uncompetitive in the international market especially due to over supplies from China which is close competitor of Pakistan.

Improvement in sea cargo handling has encouraged export of citrus by sea. As a result, citrus from Pakistan is mostly shipped by sea except to Central Asian Republics.

However, factors like non-availability of reefer containers, unilateral increases in freight rates and non-adherence to transit time continue obstructing smooth export operations and as a consequence export volumes. The problem is further compounded by unhealthy competition among exporters entailing over supplies, credit sales and lack of effective associations for trade facilitation (PHDEB, 2005a).

b) Mango

Mango is an important tropical fruit crop in Pakistan. It occupies second position after citrus in terms of area and production. For the year 2007-08, mango was cultivated on an area of 166 thousand hectares, producing 1753.7 thousand tones of mango (Government of Pakistan, 2008). This crop has seen tremendous growth as its area and production have increased significantly over the years. An increase in the area and production of mango is attributed to increasing demand for this fruit both at the national and international levels, which have made it a favourable cash fruit crop of the country.

Mango season in Pakistan starts with harvest from Sindh province in late May and finishes in Punjab in August/September. Major varieties grown in Pakistani are Dosehri, Malda, Swarnarika, Langra, Siroli, Alphonso, Gulab Khas, Fajri, Golden, Anwar Ratol and Began Phali. Sindhri is one of the major varieties grown in Sindh while in Punjab Chounsa dominates production. Chounsa and Sindhri are considered by industry as excellent varieties in terms of taste and demanded both in the domestic and export markets (PHDEB, 2005b).

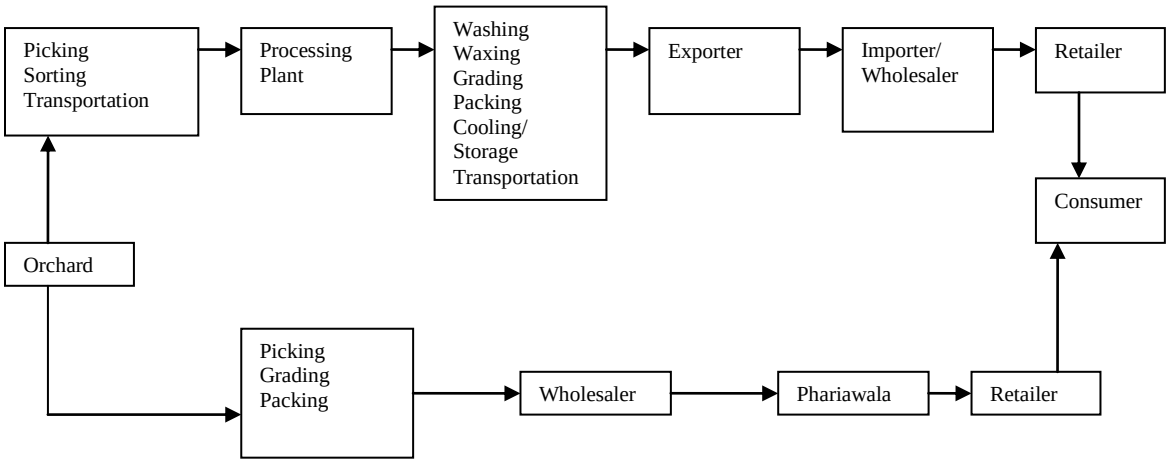
Production, post-harvest management and marketing of mango are poorly developed and returns are distributed quite unevenly, favouring middlemen. Fruit quality is generally poor and 30 to 40 per cent of the fruit is wasted in the harvest-to-market system. Modern infrastructure for cool storage, grading, post harvest treatment and transport is almost non-existent. Periodic gluts occur on domestic markets and with no capacity to store fruit. Heavy discounting of retail prices is common. The export market faces similar challenges. Pakistani mangoes have a reputation as being cheap and of poor quality, and exporters have a tendency to dump fruit in markets such as the UAE (Collins *et al*., 2007).

Marketing of mango in Pakistan is in private hands. The role of public sector is confined to create an enabling environment for market promotion. Domestic mango supply chains are fragmented and involve numerous stakeholders. Pre-harvest contractor is the starting point in the marketing of mango but often his performance is found low in terms of its impact on product quality. Their operations are guided and financed by commission agents, and they have little power to voluntarily change their present practices. Improving commercial linkages between contractors and other chain members would require support and encouragement of commission agents. Most chain activities are controlled by

commission agents, who provide finance to the contractors and determine the scheduling and flow of fruit from the contractor to the wholesale market. Processors are found working as a dumping ground for lowest quality fruit where in fact they require sound and fully mature mango. Improving commercial linkages with processors involves education of suppliers about processors' needs and their ability to pay for fruit that meets those needs. Retailers are the personal representative of growers and the last stage in the marketing of mango. They work as stall holders, vendors in urban areas and some times road side sellers in production areas.

Mango exports are an important source of valuable foreign exchange earnings for Pakistan. Exports increased from 1.16 thousand tones in 1975-76 to 105.21 thousand tonnes in 2006-07. The last five years witnessed massive increase in mango exports from Pakistan. An increase in mango exports from Pakistan is generally attributed to increased access to traditional markets through improved shipping facilities, increasing number of Pakistani immigrants and policy of the government (PHDEB, 2005b). Despite an increase in exports, share of mango exports remains at 6 percent of total mango production which is lower than other leading mango exporting countries like Mexico and Brazil contributing 14 percent and 12 percent respectively (FAOSTAT, 2007).

Figure 3.9: Marketing Channel of Mango



Export of mango from Pakistan is highly concentrated in few markets. Major markets for Pakistani mango include United Arab Emirates and Saudi Arabia where expatriate Pakistanis and Indians constitute major segment of customer base. Increased shipping facilities at cheaper rates, relatively flexible and less stringent food safety requirements are some other factors contributing major share of exports to these markets. For the year 2006-07, 46 percent mango was exported to UAE alone whereas Saudi Arabia, Oman, Kuwait, and Bahrain accounted for 17.61 percent, 12.79 percent, 1.55 percent and 1.22

percent, respectively, of the total export of mango from Pakistan. Almost 76 percent of Pakistani mango was exported to three markets (UAE, Saudi Arabia and Oman). United Kingdom is the biggest market in Europe constituting about 11.46 percent whereas France and Germany share about 1.48 percent and 1.22 percent respectively of the total exports from Pakistan (Government of Pakistan, 2007).

Pakistan is one of the leading producers of mango but unable to harvest its full potential for exports. It is generally argued that traditional varieties of production, improper orchard management, poor post harvest handling, traditional marketing practices, lack of compliance to international market requirements etc. have set limits in the expansion of export of mango from Pakistan. Good Agricultural Practices (GAP) has become a compulsory requirement to satisfy consumers about food safety. Consumers in developed markets now demand traceability of food stuff and many developed countries require quality certification for the adoption of international standards in production, handling, packing and marketing of agricultural products. Compliance to HACCP, EurepGAP, Global GAP and various other standards are mandatory requirements for export of agricultural products especially many perishable products from developing countries to the markets of developed countries.

Mango is a perishable commodity and requires careful handling during its export. Controlled temperature, durable packaging, appropriate transportation are some of the important prerequisites which determine freshness of mango and its shelf life. Infrastructural development and availability of reefers further enhance marketing efficiency for export of this delicate fruit. International market for mangoes is characterized with increasing competition of supply coming from various geographical sources throughout the year. As such, export of mango has become more competitive and demands improvements in production and marketing in line with changing trends in the international markets. The countries which developed this capability overtime have surpassed others in the export of mango.

In short, Pakistani fruits and vegetables are of good quality but many marketing imperfections and peculiarities hamper full realization of their market potential. Their perishability, seasonal nature, unsophisticated handling, improper transportation, nominal grading, fluctuating prices and high post harvest losses (almost 20-40 percent) are some of the factors which reduces their returns thus increasing risks in their marketing practices.

Table 3.10: Post-harvest Losses in the Marketing Channels of Mango

(Percent)

Level of Losses	**Channel-I**	**Channel-II**	**Channel-III**
Pre-harvest Contractor	11.02	11.02	11.02
Pharia	0.63	0.63	0.63
Stall Holder	-	2.00	-
Hawker	-	-	1.16
Consumer	0.59	0.59	0.59
TOTAL:	12.24	14.24	13.40

Source: Mohy-ud-din, Q. Marketing of Major Fruits (citrus & Mango) in Punjab. Deptt. of Agri. Marketing, U.A. Faisalabad, 1989.

Post-harvest losses for major fruits (mango and citrus) and some vegetables recorded at various levels of marketing chain are briefly summarized. In mango, for instance, at pre harvest contractor level, insect pests and diseases are the most important factors which cause about 4.50 per cent loss on standing fruit trees. About 0.99 per cent of the fruit is lost during picking, and on an average packing loss is 1.07 per cent. The transportation loss is more by trolley than by truck or pick up. At "phariawala" level losses are caused due to injured fruit and also during the cleaning process. Losses at the stall holder's level are mainly caused due to cleaning, grading and transportation etc. Losses at hawker level are mainly because of quality deterioration due to unsold fruit and physical wastage. Total marketing losses in the various marketing channels of mango range from 12.24 to 14.24 per cent of the produce (Mohy-ud-Din, 1989).

The reasons for occurrence of losses in citrus are almost the same as are observed in the case of mango fruit. Relatively more losses are observed due to picking the fruit with stem, particularly in kinnow variety as the skin of this variety is softer and is easily injured by the stem of another fruit. Total marketing losses in various marketing channels of citrus range from 16.90 to 19.90 per cent of the produce handled (Mohy-ud-Din, 1989).

In vegetables, more losses were recorded in potato, carrot and cauliflower whereas minimum loss observed in lady's finger at "pharia" level. At stall holder's level maximum loss was observed in potato and the minimum in lady's finger whereas at hawker's level, maximum wastage was observed in brinjal. The total loss in various vegetables ranged from 4 to 9.74 per cent (Siddique, 1980).

Table 3.11: Post-harvest Losses in the Marketing Channels of Citrus (Percent)

Level of Losses	Channel-I	Channel-II	Channel-III
Pre-harvest Contractor	15.35	15.35	**15.35**
Pharia	0.50	0.50	**0.50**
Stall holder	-	3.00	**-**
Hawker	-	-	**1.12**
Consumer	1.05	1.05	**1.05**
Total:	**16.90**	**19.90**	**18.02**

Source: Mohyuddin, Q. Marketing of Major Fruits (citrus & Mango) in Punjab. Deptt. of Agri. Marketing, U.A. Faisalabad, 1989.

Vast potential for the export of fruits and vegetables exists in Pakistan, however, stringent application of international standards such as the sanitary and phytosanitary measures hamper realisation of this potential. Pakistan exports raw vegetables as value addition for export purposes is virtually missing. As such, the exporters of fruits and vegetables lack awareness of modern marketing techniques to win customers confidence in the international market.

c) Apple

Like mango and citrus, apple is also a major fruit grown and consumed in Pakistan. Various varieties of apples (Top Red, Red Spur, Kala Kulu, Super Gold, Red Chief, Apple Elite, Stark Crimson, Oregon Spur, Red Rom Beauty, Royal Gala, Spartan and Double Red) are grown in the country. Besides fresh consumption, apple is processed into jellies, jams, and many other products. Apple juice is very delicious and consumed both in fresh and processed forms.

Area under apple orchards is 113 thousand hectares with a total production of 441.6 thousand tones. Balochistan has the largest share (with production of 313.6 thousand tonnes over an area of 103.2 thousand hectares) followed by NWFP (with production of 124.5 thousand tonnes over an area of 9.4 thousand hectares), while in the remaining two provinces (i.e. Punjab and Sindh) its cultivation is almost negligible. Per capita consumption of apple in the country is estimated at 2.88 Kg per annum (Government of Pakistan, 2008)

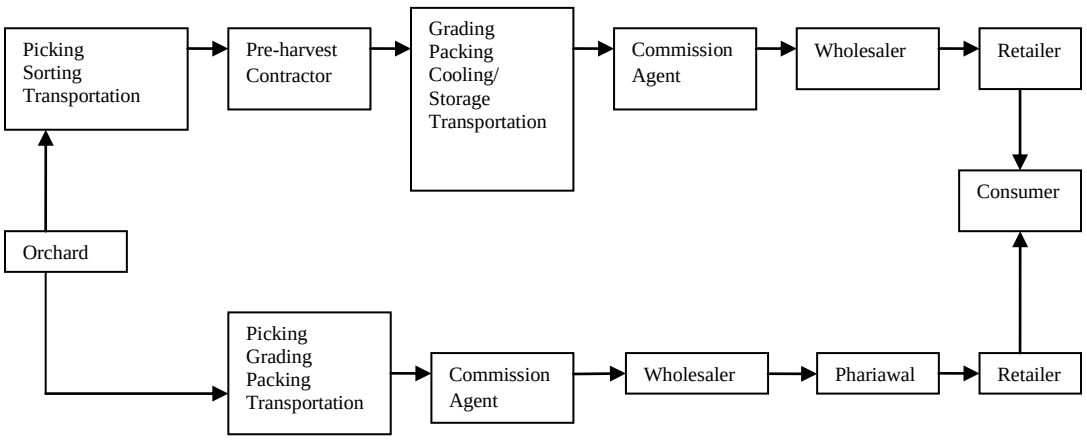
Table 3.12: Area and Production of Apple in Pakistan

Year	Area ('000' Hectares)	Production ('000' Tonnes)
2005-06	112.0	35.3
2006-07	112.6	348.3
2007-08	113.0	441.6

Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08. Ministry of Food and Agriculture (Economic Wing), Islamabad.

Private sector is engaged in the marketing of apple. However, government ensures smooth marketing through various regulatory measures. The marketing channel of apple involves growers selling crop to contractors prior to harvest typically during the flowering stage. As the product is sold, all marketing costs (transportation, handling and storage costs) are deducted and net price paid to grower. A typical social and economic relationship (provision of credit for production and Consumption purposes and marketing advice) exists between growers and commission agents. About 80 percent of the apple producers in the country sell their produce through pre-harvest contractors. Twenty percent farmers undertake self-marketing and earn almost 12 percent higher net margins when compared with pre-harvest contractors. Apple produced in Balochistan and the NWFP is generally transported to Punjab and Sindh by traditional mode of transportation (Khan *et al.*, 2007).

Figure 3.10: Marketing Channel of Apple



Major infrastructural facilities in apple producing areas are missing. Apple growers harvest and pack their crop and market it by un-refrigerated trucks to wholesale markets, where the consignment is handled and sold by commission agents. Growers have an option of selling at the prevailing market price or paying for storage in the hope for getting higher price later.

Considering geographical spread of Pakistan, storage requirements to maintain quality of the fruit till it reaches consumers are very important aspects in the marketing of apple. Poor communication system and infrastructure (inappropriate roads and storage facilities) results in higher post harvest losses. As such, a substantial quantity of the produce is wasted at various levels of the marketing chain due to injuries, cuts, overheating and dehydration (Shah and Farooq, 2006).

d) Dates

Dates are consumed both in raw and processed forms. Peak period for the consumption of dates is the month of Ramadan for Muslim community. Dates are also used in preparing sweets, confectionery, chocolates, baking products, preservatives, salads, sauces, breakfast cereals etc. With the advancement in food technology, many new products of dates have been developed, indicating bright future of this fruit crop in the country (PHDEB, 2008).

Pakistan is one of the main growers of dates. It follows Egypt, Saudi Arabia, Iran and UAE in the list of major dates producing countries with ten percent share in global production (FAOSTAT, 2005). Dates are grown in all provinces of Pakistan. However, Balochistan is the major dates producing region followed by Sindh, Punjab and NWFP. Area under cultivation along with production of dates during the last three years is given in Table 3.13.

Table 3.13: Area and Production of Dates in Pakistan

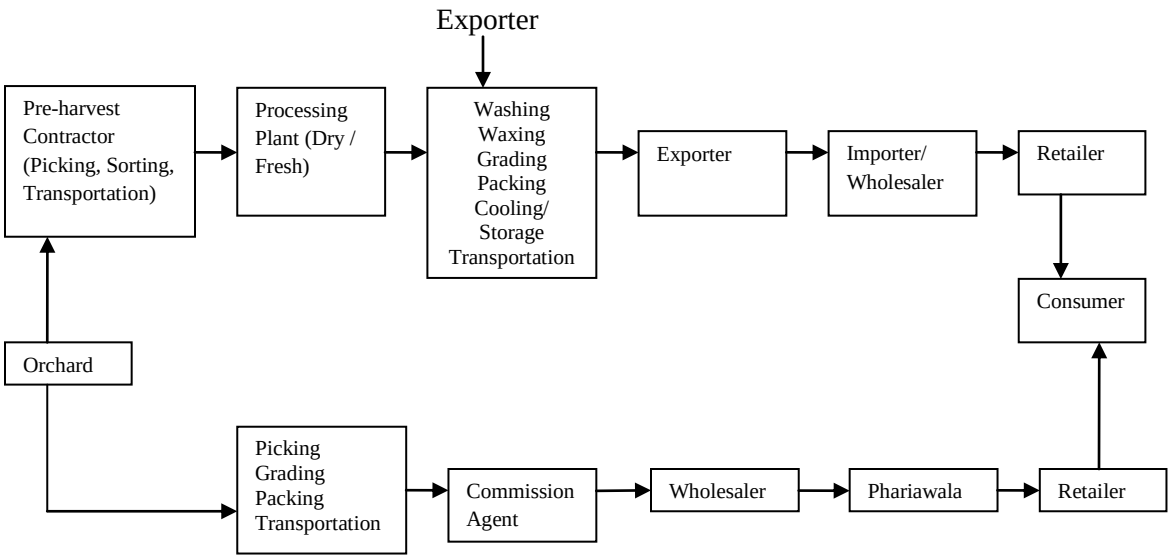
Year	Area '000' hectares	Production '000' tonnes
2005-06	82.0	496.6
2006-07	84.8	426.3
2007-08	90.1	557.5

Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08. Ministry of Food and Agriculture (Economic Wing), Islamabad.

Like other horticultural crops, trade of dates mainly rests with the private sector. Marketing of dates starts with pre harvest contractor who brings the produce in fresh

condition from orchards to wholesale markets. Commission agents have strong ties with farmers and pre harvest contractors. Grading and standardization practices are not strictly followed especially in its export.

Figure 3.11: Marketing Channel of Dates



Many problems are encountered in the marketing of dates both in the domestic as well as international markets. The fruit comes from areas which are relatively less developed in the country. As such, marketable surplus coming into the markets lacks consistency in quality and quantity. Farm to market access is almost non existent, wasting much fruit which either does not enter in the marketing chain or is converted into low value products (PHDEB, 2008).

3.2.5 Livestock and Livestock Products

Livestock plays an important role in the economy of the country. Livestock sector contributed approximately 51.8 percent of the agriculture value added and 11.3 percent to national GDP during 2008-09. Gross value addition of livestock at current cost factor has increased form Rs. 1052 billion (2007-08) to Rs. 1287 billion (2008-09) showing an increase of 22.3 percent. The value of livestock accounts for about 6.1 percent more than the combined value of major and minor crops (Government of Pakistan, 2009). Production of meat and milk is estimated 2515 (000 Tons) and 43562 (000 Tons). Livestock sector is composed of cattle, sheep and goats. Major products of livestock are milk, meat and skin (Government of Pakistan, 2009).

Government has given high priority to the development of livestock sector. As such, policy initiatives are focused on private sector led development of livestock. A fully

autonomous private sector-led, "Livestock and Dairy Development Board" and "Pakistan Dairy Development Company" have been established. The major functions of these companies are to establish a platform for investment in the livestock sector.

a) Meat

Meat is the main livestock product and comprised of mainly three types (i.e. mutton, beef and poultry meat). Among livestock animals, sheep, goat, cows and buffaloes are used as a source of mutton and beef. However, poultry meat has received significant importance in meat industry due to development of poultry industry as well as its availability to consumers at relatively cheaper prices. Total meat production (from all the three sources) in 2007-08 was 2727 thousand tonnes and per capita availability of meat was 17 kg per annum.

Table 3.14: Production of Meat and Eggs in Pakistan ('000' Tones)

Species	2005-06	2006-07	2007-08
Beef	1449	1498	1548
Mutton	554	566	578
Poultry Meat	512	554	601
Total-Meat	2515	2618	2727
Eggs (Million No.)	9712	10197	10711

Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08, Ministry of Food and Agriculture (Economic Wing), Islamabad.

Livestock marketing system is characterized by many intermediaries involved in accomplishing various marketing practices. Marketing of livestock and meat is mainly dominated by beoparies who travel across various villages to get marketable surplus. Beoparies are local butchers or sometimes agents of commission agents in the wholesale markets. They have strong linkages with beoparies and some time they are also found performing functions of village beoparies. However, they have well established market network and sources. In our domestic economy, processing activities for meat are performed by local butchers who add value to live animal by converting it into meat.

Importance of marketing in Livestock has not been duly recognized. The existing legislation provides statutes for the establishment and supervision of primary markets for farm products. As Such, Livestock and its products, including milk and meat do not have developed marketing system in Pakistan. Many required marketing functions are either absent or are of poor quality.

In the case of meat, lack of processing and storage facilities has adversely affected the development of livestock industry. As such, fresh meat supplied by traditional butchers is consumed by almost 99 percent of the meat consumers in Pakistan. This sometimes leads to shortages and uneven supply of meat in the country. Mostly, hygienic conditions at production and slaughtering points are poor. Price exploitation, compromise on quality

and quantity and disruptions in supply are some common features at this point. This particular fact also has serious repercussions on pricing mechanism in this sector which often is considered as exploitative. Keeping in view the increasing demand for hygienic meat products in Pakistan, government may come ahead to promote private investment in this industry which will not only ensure smart returns to investors but also safeguard consumer's interests.

Livestock wholesale markets are unhygienic, filthy, unorganized and exploitative which hampers scope for any further expansion. Physical and medical fitness of animals are not guaranteed. As such, quality of animals for slaughtering is not ensured which decreases further chances of improvement in the meat and milk processing industries.

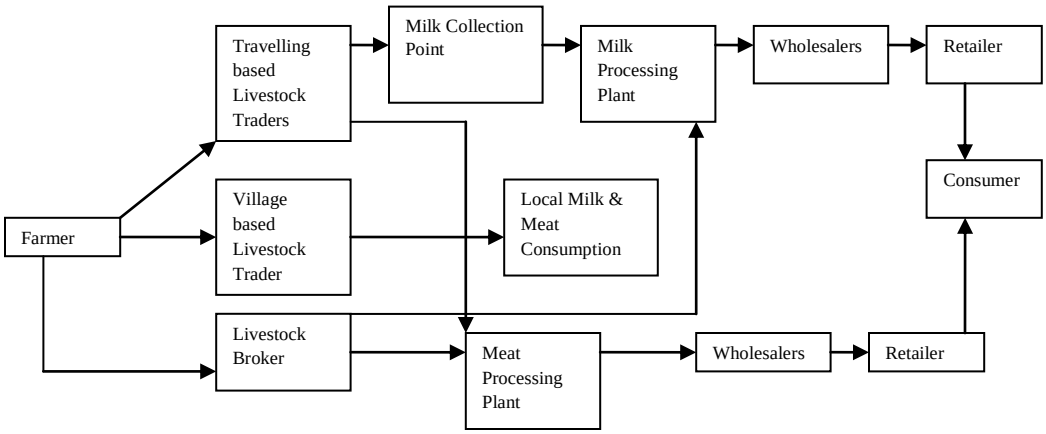
There is no grading system for meat animals and their carcass. Normally butchers sell meat according to their wish and prices do not depict quality. Recent price hike in meat is one of the major issues which reflect inefficiency in the livestock marketing system.

b) Milk

Milk is a major component of Pakistan's livestock sector. Total milk production was 42171 thousands tons in 2006-07. In Pakistan two animals' cow and buffalo are main sources of milk production. However, some volume is obtained from sheep, goat and a little from camel. There is an increasing trend in milk production in Pakistan which is due to an increase in income level which has pushed up the demand for milk. Resultantly per capita requirement of milk is also rising (95.5 kg per annum). Pakistan is the fifth biggest producer of milk in the world however a very small fraction of total production (3 percent) enters the national processing industry. As such, pace of development of this sector is slow.

In the milk marketing chain, milk collectors assemble milk from small farmers and onward supply it to wholesalers or processors. The village milk collector has limited resources to fulfil quality requirements and therefore often adds ice and some other materials to keep milk fresh which deteriorates its quality. The village dealers sell milk to wholesaler operating in cities and towns. They have their own shops and sometimes, dairy processing plants at small levels. They collect milk from various sources and onward supply to retailers or processors. They separate cream and other products from milk and sell the rest. Processors change basic form of milk into UHT milk, powdered, condensed and skimmed milk products. The processing companies have their own distribution network. A major issue in the limited expansion of milk processing industry in Pakistan is high cost of packaging material and limited segment of consumers who like the taste of UHT milk.

Figure 3.12: Marketing Channel of Meat and Milk



Dairy industry in Pakistan is more established as compared to any other livestock related activity. Private sector is more organized, advanced and equipped with better marketing system for milk. However small scale milk collection and processing activities are greatly hampered due to non availability of refrigerated tanks and cool reefer vehicles. Packaging cost in the processing industry is very high.

Post harvest handling of milk and related products are very poor. Due to non availability of proper storage and transportation system, almost 95 percent of total milk does not enter in the organized marketing chain. Post harvest losses are enormous. There is a need to develop cool chain network for milk and related products for realizing full potential of this sector and to enhance consumer welfare.

3.2.6 Poultry

Poultry is one of the vibrant segments of agriculture industry of Pakistan. This sector generates employment (direct/indirect) and income for about 1.5 million people. Its contribution in agriculture and Livestock growth is 4.81 and 9.84 percent respectively. Poultry meat contributes 19 percent of the total meat production in the country. Poultry sector has shown a steady growth at the rate of 8-10 percent annually. Government has allowed import of Incubators, Brooders, Evaporation cooling pads, cooling system, Grain storage silos for poultry, poultry equipments, milk and meat processing machinery/equipment (not manufactured locally) at zero custom duty (Government of Pakistan, 2009).

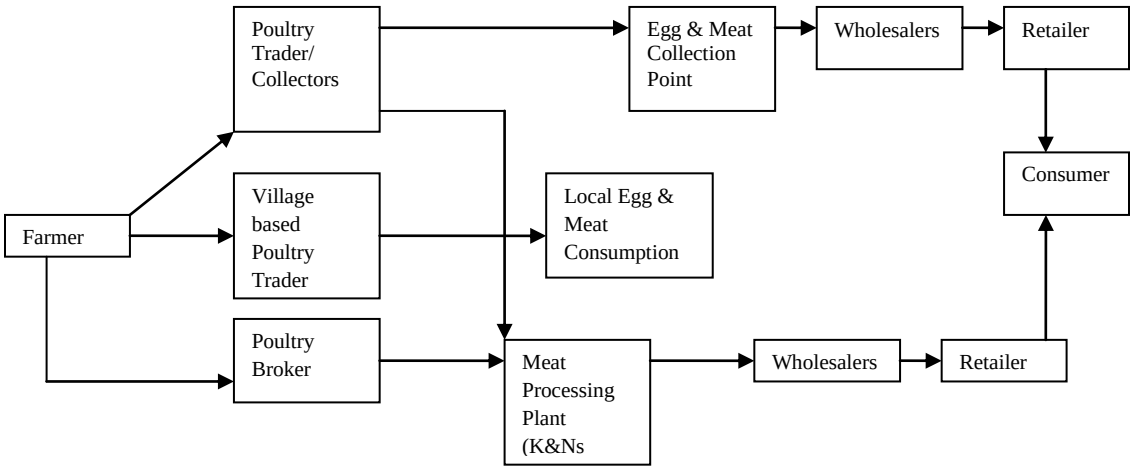
Generally, 2-3 intermediaries are involved in the marketing of poultry products from producer to the end user. Village dealers or collectors of poultry birds collect lots from farmers and dispose off in the wholesale market. Wholesalers or artis work in the

wholesale market. They purchase from village dealers and producers and sell it to retailers and processors. They have their backward linkages with producers and forward linkages with retailers and processors. Retailers work in cities and towns and provide products directly to consumers. They mainly purchase from wholesale market and then sell to consumers after adding their margin.

Poultry meat processing industry is more developed than any other meat processing industry in Pakistan. This industry works on self initiative basis. It has developed its own farms and also purchases from some contract farmers and wholesale markets. However, development of this sector is hampered due to policies of governments (e.g. heavy taxation). The issue of bird flu in the recent past has also hit this industry badly.

Poultry wholesale markets are performing comparatively well as compared to other markets. These markets are not much developed but are more equipped with required facilities and information. There is room for improvement in these markets. As such, better information, transportation, slaughtering, storage and related activities are needed. Transportation is major issue which is not appropriate for birds and eggs. This increases transportation losses, further adding to post harvest loss of poultry and related products. Some firms have started manufacturing specific packaging trays for poultry eggs which has improved market access and decreased losses.

Figure 3.13: Marketing Channel of Poultry



3.2.7 Fish

Fisheries are important source of livelihood for the coastal inhabitants. Apart from marine fisheries, inland fisheries are also important source of animal protein. Although share of fisheries in the GDP is very little but its contribution to national income through export earnings is substantial. The major buyers of seafood from

Pakistan are China, UAE, Thailand, Korea, Malaysia, Indonesia, Hong Kong and some Middle Eastern countries. During the year 2008, total fish production was estimated at 685 thousand tonnes, of which share of marine sector was 477 thousand tonnes. Contributions from inland sector were about 208 million tonnes (Government of Pakistan, 2008).

Government of Pakistan has taken number of steps to improve fisheries sector, which among others, include strengthening of extension services, introduction of new fishing methodologies, increased production through aquaculture, development of value added products, enhancement of per capita consumption of fish and up gradation of socio-economic conditions of fishermen's community (Government of Pakistan, 2009).

Table 3.15: Production of Fish in Pakistan (000 Tonnes)

Year	Inland	Marine	Total
2006	179.9	425.0	604.9
2007	250.0	390.0	640.0
2008	208.0	477.0	685.0

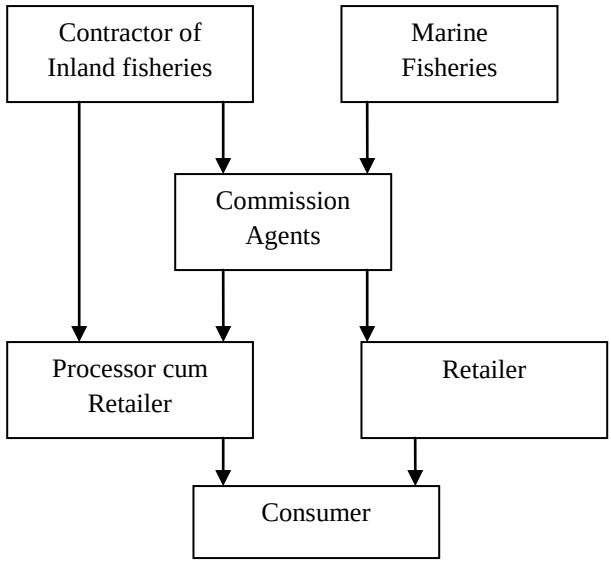
Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08. Ministry of Food and Agriculture (Economic Wing), Islamabad.

Many market intermediaries are involved in the marketing chain both in the case of marine and inland fish. Fish supplied by producers pass through different channels before it reaches ultimate consumers. There are four intermediaries involved in the flow of fresh water fish viz., contractors, commission agents, retailers, processors cum retailers. Direct marketing as practiced by contractors is made possible only when there is direct contact between producers and consumers. In most of the cases, producers sell their catch through intermediaries particularly when consumer markets are distantly located from the production areas. The common practice of channelling the catch is through commission agents because of producer's desire to concentrate on production. The retailers purchase supplies from commission agents or contractors. They have permanent shops in the urban markets generally close to the commission shops. The retailers finally sell fish to urban consumers (Hussain *et al*., 2009).

Fisheries encounter many problems in their marketing. Wide price fluctuations lead to uncertainties in securing favourable price after harvest. Other problems are delayed payments by commission agents: relatively high transportation cost and lack

of knowledge on actual marketing condition. In times of bumper production of marine fish, inland fish contractors hardly cope with existing competition.

Figure 3.14: Marketing Channel of Fish



Pakistan's sea food has great export potential but the European Union has levied a ban on seafood import from Pakistan due to SPS concerns. As such, fish catch and handling practices do not meet international standards due to lack of requisite infrastructure and other facilities.

Chapter 4

Sanitary and Phytosanitary (SPS) Agreement and its Impact on Agricultural Exports from Pakistan

This chapter seeks to delineate the impact of sanitary and Phytosanitary agreement of WTO on Agricultural Exports from Pakistan. The chapter is organized in three sections. Section I summarizes briefly the key elements of SPS agreement. Section II explains concerns relating to implementation of SPS measures to the stakeholders in Pakistan and finally section III describes briefly the wider implications of SPS measures for Pakistan.

The SPS agreement concerns the application of Sanitary and Phytosanitary measures- in other words food safety, animal and plant health regulations. The agreement recognizes that governments have the right to take Sanitary and Phytosanitary measures but that they should be applied only to the extent necessary to protect human, animal or plant life or health and should not arbitrarily or unjustifiably discriminate between members where identical or similar conditions prevail.

In order to harmonize Sanitary and Phytosanitary measures on wide basis as possible, member countries are encouraged to base their measures on international standards, guidelines and recommendations where they exist. However, members may maintain or introduce measures, which result in higher standards if there is scientific justification, or as a consequence of consistent risk decisions based on an appropriate risk assessment. The agreement spells out procedures and criteria for the assessment of risk and the determination of appropriate levels of Sanitary or Phytosanitary protection.

It is expected that members would accept the Sanitary and Phytosanitary measures of others as equivalent if the exporting country demonstrates to the importing country that its measures achieve the importing country's appropriate level of health protection. The agreement includes provisions on control, inspection and approval of procedures.
The key elements of the SPS Agreement are detailed below:

4.1 Key Elements of SPS Agreement

a) Harmonization: The harmonization of SPS standards can act to reduce regulatory trade barriers. As such, members are encouraged to participate in a number of international standards-setting organizations, most notably Codex Alimentarius Commission (CAC), the International Office of Epizootics (OIE) and the International Plant Protection Convention (IPPC). Members are expected to base their SPS measures on the standards, guidelines, or recommendations set by these organizations, where they exist. They are, however, entitled to adopt measures that achieve a higher level of protection, provided this can be justified scientifically.

b) Equivalence: Members are required to accept the SPS measures of other members where they can be demonstrated to be equivalent; they offer the same level of protection.

This protects exporting countries from unjustified trade restrictions, even when these products are produced under qualitatively different SPS requirements. In practice, however, the right of the importing country to test imported products limits the right of equal treatment.

c) Assessment of risk and determination of the appropriate level of Sanitary or Phytosanitary protection: Members are required to provide scientific evidence when applying SPS measures that differ from international standards. This evidence should be based on risk assessment, taking into account, when possible and appropriate, risk assessment methodologies developed by the international standards organizations. Further, members are obliged to avoid arbitrary or unjustifiable distinctions in the levels of protection it considers to be appropriate if the distinctions would act to distort trade.

d) Adaptation to regional conditions, including pest- or disease-free areas and areas of low pest or disease prevalence: The agreement recognizes that SPS risks do not correspond to national boundaries; there may be areas within a particular country that have a lower risk than others. The Agreement, therefore, recognizes that pest- or disease-free areas may exist, determined by factors such as geography, ecosystems, epidemiological surveillance, and the effectiveness of SPS controls.

e) Transparency: The Agreement establishes procedures for enhanced transparency in the setting of SPS standards amongst members. Members are obliged to publish and notify the SPS Secretariat of all proposed and implemented SPS measures. This information is relayed via the "Notification Authority" within each member Government. Moreover, members are required to establish an "Enquiry Point," which is the direct point of contact for any other member regarding any questions about SPS measures or relevant documents.

f) Consultation and dispute settlement: The WTO Agreement establishes detailed and structured procedures for the settlement of disputes between members regarding the legitimacy of SPS measures that distort trade. This takes the form of a dispute settlement body consisting of member representatives. (www.wto.org)

Given that Pakistan implements qualitatively or quantitatively lower SPS standards than developed countries, in principle the SPS Agreement should help to facilitate trade from Pakistan to developed countries by improving transparency, promoting harmonization and preventing the implementation of SPS measures that cannot be justified scientifically. Much of this is dependent, however, on the ability of the government to participate effectively in the agreement. The agreement itself tries to facilitate this by acknowledging the special problems that Pakistan and many other developing countries face in complying with SPS measures and allowing for special and differential treatment.

Box 4.1: Codex Alimentarius Commission

The Codex Alimentarius Commission was created in 1963 by FAO and WHO to develop food standards, guidelines and related texts such as codes of practice under the Joint FAO/WHO Food Standards Programme. The main purposes of this Programme are protecting health of the consumers and ensuring fair trade practices in the food trade, and promoting coordination of all food standards work undertaken by international governmental and non-governmental organizations. To this end the Codex Alimentarius Commission adopts standards for commodities, codes of practice and maximum limits for additives, contaminants, pesticides residues and veterinary drugs, which are prepared by specialized committees and task forces.

Box 4.2: International Office of Epizootics

The International office of Epizootics (OIE) is an intergovernmental organization created by the International Agreement of 25 January 1924, signed by 28 countries. In December 2003, the OIE totaled 165 Member Countries.

OIE seeks to

a) Guarantee the transparency of animal disease status world-wide

b) Collect, analyze and disseminate veterinary scientific information

c) Provide expertise and promote international solidarity for the control of animal diseases

d) Guarantee the sanitary safety of world trade by developing sanitary rules for international trade in animals and animal products.

Major Objectives of OIE

a) To ensure transparency in the global animal disease and zoonosis situation

b) To collect, analyze and disseminate scientific veterinary information.

c) To provide expertise and encourage international solidarity in the control of animal diseases.

d) Within its mandate under the WTO, SPS Agreement, to safeguard world trade by publishing health standards for international trade in animals and animal products.

e) To improve the legal framework and resources of national Veterinary Services.

f) To provide a better guarantee of the safety of food of animal origin and to promote animal welfare through a science-based approach.

Box 4.3: International Plant Protection Convention (IPPC)

The International Plant Protection Convention (IPPC) is an international treaty whose purpose is to secure a common and effective action to prevent the spread and introduction of pests of plants and plant products, and to promote appropriate measures for their control. The Convention extends to the protection of natural flora and plant products. It also includes both direct and indirect damage by pests, thus including weeds. The provisions extend to cover conveyances, containers, storage places, soil and other objects or material capable of harbouring plant pests. National Plant Protection Organizations (NPPOs) and Regional Plant Protection Organizations (RPPOs) work together to help contracting parties meet their IPPC obligations.

4.2 Concerns Relating to Implementation of Sanitary and Phytosanitary Agreement (SPS) in Pakistan

4.2.1 Participation of Pakistan in the SPS Agreement

Although the majority of low and lower middle-income countries are members of the WTO, the rate of membership (62 percent) was found significantly lower than amongst upper middle or high income countries (83 percent and 92 percent respectively). Likewise the majority of low and lower middle income countries were reported to be the members of the three major international standards organizations; Codex Alimentarius Commission, OIE and IPPC, although less than 30 per cent were reported as members of WTO and all three of these organizations (See Table 4.1).

Table 4.1: Membership of WTO and International Standards Organizations by Income Group, June 1999.

Income group	Total countries	WTO	OIE	IPPC	Codex Alimentarius	All
Low	60	40	52	26	51	19
Lower middle	60	34	40	35	49	20
Upper middle	29	24	25	23	31	17
High	38	35	33	25	32	26
Total	187	133	150	109	163	75
Least developed	29	29	21	11	25	9

Source: WTO (1999).

The SPS Agreement lays down certain requirements that aim to ensure transparency in the implementation of SPS measures in member countries. Members are required to

establish specific contact points to facilitate communication regarding SPS measures. This involves firstly, a single national 'enquiry point', which is responsible for responding to queries from a single national 'notification authority', which is responsible for all procedures associated with notification of new or amended SPS measures. It was reported that only 65 percent of low and lower middle income countries had specified an 'enquiry' point and only 59 percent had specified a national 'notification authority' until June 1999. These proportions included 29 least developed countries, which were not required to comply until 2000. Given the fundamental importance of the transparency conditions to the working of the SPS Agreement, this indicates an important weakness in the participation of developing countries in the SPS agreement (See Table 4.2)

The most significant constraint of Pakistan to effective participation in the SPS Agreement is judged to be its insufficient ability to assess the implications of developed country SPS requirements following notification. Insufficient ability to participate effectively in the dispute settlement procedures and to demonstrate that domestic SPS measures are equivalent to developed country requirements are considered as major constraints. These constraints clearly relate to the level of access to scientific and legal expertise, which is an important problem for Pakistan, reflecting to a large extent its limited financial resources (See Table 4.2)

It is evident that Pakistan is constrained in its ability to export agricultural and food products to developed countries under SPS requirements. Indeed, Pakistan considers SPS requirements to be one of the greatest impediments to trade in agricultural and food products, to the developed countries. This reflects the fact that developed countries typically apply stricter SPS measures than developing countries and that SPS controls in Pakistan are weak and overly fragmented. Furthermore, in certain circumstances SPS requirements are incompatible with prevailing systems of production and marketing in Pakistan. As such, large-scale structural and organizational changes are required to comply with SPS requirements.

4.2.2 Problems of Pakistan in Complying with SPS Requirements

The problems Pakistan has in complying with SPS requirements reflect its wider resource and infrastructure constraints that limit not only its ability to comply with SPS requirements, but also its ability to demonstrate compliance. (See table 4.3) A particularly acute problem is access to appropriate scientific and technical expertise. Indeed, in Pakistan knowledge of SPS issues is poor, both within government and the food supply chain, and the skills required to assess SPS measures applied by developed countries are lacking (WTO, 2003).

Table 4.2: Notification of SPS Measures by WTO Member States*-August 1999[a].

Income group	Number of members	National notification authority	Enquiry point	Number of members notifying standards	Number of measures notified
Low	40	15	18	9	19
Lower Middle	34	29	30	16	201
Upper Middle	24	20	21	14	374
High	35	32	33	28	1708
Total	133	96	102	67	2302
Least Developed	29	6	58	4	8

- WTO secretariat contains a list of names, addresses, telephone and telefax number of the 'Enquiry points' foreseen in Paragraph 3 of Annex B of the SPS Agreement, and any additional information provided by delegations concerning its operation, as submitted to the Secretariat. Members able to provide an electronic (E-mail) address as well are requested to communicate these to the Secretariat (Gretchen.Stanton@wto.org). Pakistan has provided the 'committee on Sanitary and Phytosanitary Measures of WTO" that any information about 'National Enquiry Points' be referred to "Adviser and Director General, Department of Plant Protection, Jinnah Avenue, Malir Halt, Karachi. Telephone :+(9221) 921 8607/921 86 12/15, Telefax: +(9221) 921 86 73"
- Based on published World Trade Organization documentation. Income groups defined by World Bank.
- Source: WTO (1998); WTO (2003).

Table 4.3: Factors Influencing Ability of Pakistan to Participate Effectively in SPS Agreement

Constraints
Insufficient ability to:
i. Assess implications of developed country SPS requirements following notification.
ii. Participate effectively in dispute settlement procedures.
iii. Demonstrate that domestic SPS measures are equivalent to developed country requirements
iv. Undertake risk assessment of SPS requirements.
v. Attend SPS Committee and international standards organization meetings.
vi. Assess the scientific justification of developed country SPS requirements

Source: WTO (2003)

The importing countries judge the merit and integrity of Pakistan and other exporting countries by the consistency of acceptable product quality and the authenticity of certifications in line of their compliance with the mandatory import quality requirements. Food control agencies of food importing countries maintain risk lists of exporting countries depending upon their reputation and compliance with the mandatory import requirements and certification credibility. Products from listed countries are sometimes automatically detained or strictly scrutinized with accompanying costs.

The major defects causing detention and rejection of food consignments were mainly comprised of filth contamination, microbiological contamination and incorrect food labelling in international trade (See Table 4.4)

A broader indication of the impact of SPS requirements on developing country exports of agricultural and food products are provided by data on rejections following border inspection in developed countries. At the current time, these data are only systematically collected and publicly available for the United States. Over the period June 1996 to June 1997, there were significant rejections of imports from Africa, Asia and Latin America and the Caribbean due to microbiological contamination, filth and decomposition. The cost of rejection at the border was also considerable, including loss of product value, transport and other export costs, and product re-export or destruction (FAO, 1999). This indicates considerable problems that developing countries have in meeting basic food hygiene requirements.

There is strong need for application of Sanitary and Phytosanitary measures that include enforcement of laws which protect human, animal or plant life and health based on scientific evidence, environmental considerations and use of child labour in the production process for enhancing export of agricultural products from Pakistan.

Appropriate measures are required for curtailing illicit trade practices and ensuring quality of exports in terms of purity of the product, environmental considerations and labour standards in order to comply with emerging requirements of WTO satisfactorily.

Table 4.4: Import Detentions by the US Food and Drugs Administration: 2001-02 (Number of Detentions, Total Value of Imports* and Import Value per Detention of Fish Products, Fruits and Vegetable Imports)

Sr. No.	Countries	Detentions		Realized imports		Import value per detention ($ '000')
		Number	Percent	Value, ($ Million)	percent	
1.	Developing countries	6660	78.4	10222	70.5	1535
1.1	Low income countries	763	9.0	1173	8.1	1537
	(Excluding Honduras)**	(722)	(8.5)	(832)	(5.7)	(1152)
1.2	Middle income countries	3232	38.0	4623	31.9	1430
1.3	Upper-middle income countries	2665	31.4	4427	30.5	1661
2	High Income countries	1835	21.6	4281	29.5	2333
3	All countries	8495	100	14503	100	1707

Notes

** Countries are classified using the World Bank's income-based classification system.*

*** Honduras seems to experience a relatively low detention rate because its major export product, banana, is less susceptible to SPS violations compared to other food items covered in this tabulation.*

Source: Athukorala, Prema-Chandra and Jayasuriya, Sisira (2003).

According to the USFDA the Asian food consignments were detained because of violation on filth contamination (35.2 percent), followed by microbiological contamination (15.5 percent), low acid canned foods (14.3 percent) and decomposition (11.5 percent) (See Tables 4.5 & 4.6). The difficulties in exporting under increasingly strict SPS measures are manifold and particularly acute for Pakistan. Food safety

measures are not well structured to cope with growing demand of sophistication in managing risks of food (Athukorala, Prema-Chandra and Jayasuriya, Sisira, 2003).

Pure Food Ordinance (1960) and Pure Food Rules (1965), (Government of Pakistan, 1992) form the legislative framework of food safety in Pakistan. The rules give authority to provincial governments to appoint public analysts for the investigation of quality and safety of food. As such, there is weak federal structure of food safety programme in Pakistan.

Table 4.5: Detention of Imports by the USFDA: 2001-02 (Percentage distribution of Shipments of Fish Products, Fruits and Vegetables Detained)

Product/cause of detention	All Countries	Developed Countries	Developing Countries
Unsafe additive	1.8	0.6	2.0
Poisonous & deleterious matter	12.2	8.5	12.8
Contaminations	17.3	1.4	20.1
Insanitariness	25.0	13.6	27.0
Acidification	11.2	22.2	9.3
Under-processed	1.8	0.5	2.0
Inadequate information	12.2	35.5	8.1
Deficiency labeling	11.7	13.3	11.4
Other	6.9	4.4	7.3
Total	100	100	100

Source: Athukorala, Prema-Chandra and Jayasuriya, Sisira (2003).

The Pure Food Rules in Pakistan are enforced through health service delivery channels of the provincial governments. The District Health Officer and Deputy Health Officer function as food inspector for sampling and inspection. On the other hand, the Municipality/Corporation appoints food inspectors and sanitary inspectors for sampling purposes. Any other public servant appointed as inspector can execute the power of food inspector. The existing food regulations and food safety procedures in Pakistan do not cope with the emerging requirements of Sanitary and Phytosanitary agreement.

The Pakistan Standard and Quality Control Authority (PSQCA), with its Food and Agriculture Division has developed standards for foods and food products. The PSQCA standards are voluntary standards and these indirectly complement the implementation of Pure Food Ordinance, which is mandatory regulatory framework for the entire country.

Common food products like edible oils, biscuits, grapes, and bananas are enforced through Pure Food Ordinance (1960). Standards for other food product such as banaspati ghee, cottonseed oil, refined soybean oil, biscuits, margarine and cooking oils are also enforced through Pure Food Ordinances. Federal Ministry of Health monitors the quality on import and export of food products. The Agriculture Produce (Grading and Marking) Act, 1973 is implemented by the Ministry of Agriculture. Some food products like marine products, oil cake, dry whole chillies, onions, potatoes, citrus fruits, Citrus and eggs are under mandatory certification scheme of national grade standard system. Despite such measures, a lot needs to be done at the governmental level to cope with the Sanitary and Phytosanitary challenges (Chaudhry, 2000).

Table 4.6: Number of Contraventions cited for US Food Administration Import Detentions, 1996-97.

Reason for contravention	Africa	Latin America and the Caribbean	Europe	Asia	Total
Food additives	2 (0.7 %)	57 (1.5 %)	69 (5.8 %)	426 (7.4 %)	554 (5.0 %)
Pesticide residues	0 (0.0 %)	821 (21.1 %)	20 (1.7 %)	23 (0.4 %)	864 (7.7 %)
Heavy metals	1 (0.3 %)	426 (10.9 %)	26 (2.2 %)	84 (1.5 %)	537 (94.8 %)
Mould	19 (6.3 %)	475 (12.2 %)	27 (2.3 %)	49 (0.8 %)	570 (5.1 %)
Microbiological contamination	125 (41.3 %)	246 (6.3 %)	159 (13.4 %)	895 (15.5 %)	1425 (12.8 %)
Decomposition	9 (3.0 %)	206 (5.3 %)	7 (0.6 %)	668 (11.5 %)	890 (8.0 %)
Filth	54 (17.8 %)	1253 (32.2 %)	175 (14.8 %)	2037 (35.2 %)	3519 (31.5 %)
Low acid canned foods	4 (1.3 %)	142 (3.6 %)	425 (35.9 %)	829 (14.3 %)	1400 (12.5 %)
Labelling	38 (12.5 %)	201 (5.2 %)	237 (20.0 %)	622 (10.8 %)	1098 (9.8 %)
Other	51 (16.8 %)	68 (1.7 %)	39 (3.3 %)	151 (2.6 %)	309 (2.8 %)
Total	303 (100 %)	3895 (100 %)	1184 (100 %)	5784 (100 %)	11166 (100 %)

Source: FAO (1999).

Pakistan National Accreditation Council (PNAC) has been established as an autonomous body under the administrative control of the Ministry of Science & Technology to regulate the Accreditation and Registration System in the country. The PNAC is a national body assigned to assess, qualify and supervise certification agencies,

laboratories, training course providers and personnel in the relevant fields. The PNAC is member of the International Accreditation Forum (IAF) and International Laboratory Accreditation Council (ILAC) – the apex international agencies in relevant fields, and also acts as focal point for co-ordination with relevant international, regional and national organizations.

This ensures that all ISO certification in Pakistan have international recognition and thus saves cost and time spent by local companies on testing and inspection by the buyers.

Pakistan is aware of the SPS Agreement, supports its overall objectives, and acknowledges that there are longer-term benefits provided the Agreement is implemented in an appropriate manner. However, Pakistan has concerns about the manner in which the SPS Agreement has been implemented to-date. Particular concerns are: developed countries take insufficient account of its needs when setting SPS requirements; insufficient time is allowed between notification and implementation of SPS requirements; and insufficient technical assistance is provided to Pakistan by developed countries (See Table 4.7).

To date, Pakistan has not actively participated in the SPS Agreement. Indeed, Pakistan is not fairly represented at SPS Committee meetings or meetings of the international standards organizations and, as a result, may fail to utilize the provisions and mechanisms laid down by the Agreement to its advantage. Key problems of Pakistan in this regard are: insufficient ability to assess the implications of developed country SPS requirements following notifications; insufficient ability to participate effectively in dispute settlement procedures etc.

Pakistan may face difficulties in meeting the costs involved in exporting agricultural products under the Sanitary and Phytosanitary Agreement. The costs involve both the production costs of respecting the SPS requirements and the conformity costs of making sure they are respected.

When SPS requirements increase, production costs do also as new inputs may be required or technologies change. The conformity costs include the costs of certification and control. It may be argued that the costs of respecting SPS measures will be higher in Pakistan than in developed countries. Access to technical know-how is more restricted and the private service sector and the public sector that certifies and controls conformity are also not well developed. The establishment of international disciplines as to apply SPS measures is therefore potentially very important for Pakistan (Karki, 2002).

Box 4.4: Pakistan Standard and Quality Control Authority (PSQCA)

To provide one-window services for standardization and quality control, Government of Pakistan established Pakistan Standards and Quality Control Authority (PSQCA) by Act-VI of 1996. Three organizations namely Pakistan Standards Institution (PSI), Central Testing Laboratories (CTL) and Metal Industry Research and Development Centre (MIRDC) have been merged into PSQCA. The Authority works through three centres namely, Standards Development Centre (SDC), Quality Control Centre (QCC) and Technical Services Centre (TSC). PSQCA is a member of International Organization for Standardization (ISO), International Electrochemical Commission (IEC) and International Organization for Legal Metrology (IOLM)

Objectives and Functions of PSQCA

a. *Setting up of Standards on quality and dimensions, preparation and promotion of general adoption of Pakistan Standard Specifications, operation of Certificate Marks System and coordination of the efforts of producers and users for the improvement of standardization and to provide assistance in the manufacture of quality products.*

b) *Testing and assessment of industrial raw materials and finished products to establish their quality, grade and composition with reference to national and international standard specifications of quality in various fields like chemical, chemical products and formulations, textile, food items etc.*

c) *Coordination and cooperation with other national, regional and international organizations, associations, societies, institutes or councils and dissemination of technical information through seminars, workshops, symposia, print and electronic media and to develop a quality conscious culture in Pakistan.*

Table 4.7: Problems in meeting SPS Requirements in Exporting Agricultural Products

Sr. No.	Problems
1.	Insufficient access to scientific/technical expertise.
2	Incompatibility of SPS requirements with domestic production/marketing channels.
3	Poor access to financial resources.
4	Insufficient time permitted for compliance.
5	Limitations in administrative arrangements for SPS requirements.
6	Poor awareness of SPS requirements amongst government officials.
7	Poor awareness of SPS requirements within agriculture and food industry.
8	Poor access to information on SPS requirements.

Source: WTO (2003)

Table 4.8: SPS Measures-Concerns of Pakistan

Sr. No.	Main Concerns
1.	Developed countries take insufficient account of the needs of Pakistan in setting SPS requirements.
2.	Insufficient time is allowed between notification and implementation of SPS requirements.
3.	Insufficient technical assistance given by developed countries.
4.	Developed countries unwilling to accept Pakistan's SPS measures as equivalent.
5.	Harmonization process takes insufficient account of needs of the country.
6.	Insufficient information given with notifications of SPS requirements.
7.	Developed countries unwilling to engage in bilateral negotiations with Pakistan and other developing countries.

Source: WTO (2003)

Box 4.5: Pakistan National Accreditation Council (PNAC)

An autonomous organization under the administrative control of Ministry of Science and Technology, is striving to promote conformity with the international practices of certification, testing, calibration and inspection that will facilitate exports and global trade, resulting in prosperity and harmony with other nations.

Services offered by PNAC

a) Accreditation of Conformity Assessment Bodies (CABs) according to ISO Guide 62 for QMS Certification.
b) Accreditation of CABs according to ISO Guide 66 for EMS Certification.
c) Accreditation of Testing and Calibration Laboratories according to ISO – 17025.
d) Registration of Auditors, Training Courses and Training Course providers in the relevant fields.
e) Promotion of quality improvement practices in the country.

Benefits of accreditation with PNAC

a) Build confidence of consumers in a product or service certified by an accredited CAB.
b) Build confidence of exporters that whatever they export conforms to international requirements.
c) Facilitate the regulators in maintaining security, health, safety, environment and other such requirements.
d) Enhance credibility of the companies and enterprises certified by accredited CAB.
e) Promote quality culture that provides opportunities for business and export.

4.3 Wider Implications of SPS Measures for Pakistan

(a) Economic Dependency

SPS measures can effectively force exporters of agricultural products, and various institutions in Pakistan that represent them, into very specific production and trading methods. To service export trade, firms in Pakistan will have to invest in training, implement specific systems (such as HACCP) and sign up to particular quality assurance schemes that would add significantly to their costs. In extreme, such requirements may tie exporters in Pakistan to a particular trade. These arrangements may be attractive and lucrative in the short term, but mean that exporters will have to invest relatively heavily in staff, equipment and trading relations, which will add to their total costs and represent

a potential burden in the medium to long-term, for example if the trade is halted for any reason.

This potentially beneficial improvement in quality management may further cause problems for Pakistan if the export market is closed for any particular reason (such as the loss of a contract or reduction in demand), and traders may be compelled to revert to local markets or nearby export opportunities. The alternative markets available to Pakistan are however of relatively lower value, and may not cover the extra fixed costs that may have been put into servicing the higher value developed country export trade.

(b) Quality of Products in the Domestic Market

The issue of product quality in the domestic market has an important bearing on its export to developed country markets. There are several examples of products that do not meet the required SPS standards for exports, being sold in local markets. Given the circumstances of rejection of products from the export trade, this might seriously threaten the welfare of local consumers. Naturally this will depend on how local SPS standards are applied, but there are widespread complaints of products with high levels of contamination appearing on local markets in Pakistan.

The export business may even detract products from the local markets. As such, local consumer welfare in the country may be compromised by either the non-availability of the product, or its limited availability at high price. This is obviously a dualistic problem. On the one hand, consumer welfare may be lowered by non-availability of the traditional product, whilst on the other it may be augmented by financial benefits to exporters.

(c) Enhanced Export Potential

Once exporters of agricultural products from Pakistan have met SPS standards as applied by other countries, it may be possible for them to widen their export base, and supply to a range of different markets. As noted earlier, a number of developed countries have relatively higher SPS standards and as a result, higher export potential (See Table 4.9). Exacting SPS requirements will actually benefit exporters in Pakistan and offer them an important source of competitive advantage. Associated with this they can also exploit the fact that their products, are by definition "organic". If this is coupled with rigid SPS standards and reliable conformity assessment procedures, traders in Pakistan can benefit by serving growing market segments in developed country markets. Extensive production methods may also appeal to an increasingly environmentally aware world market provided such claims are associated with high quality standards.

Table 4.9: World Merchandise Exports, 1970-1999 (selected years)

Exports	Year	Developed Countries	Developing Countries	Total
(a) Total Exports ($ Million)	1970	218.9	38.6	257.5
	1980	1208.2	241.8	14.50
	1990	2360.5	539.2	2899.7
	1995	3305.6	1054.3	4359.9
	1999	3564.0	1244.2	4808.2
(b)Agro-food products Including Food Processing ($ Million)	1970	37.5	20.9	58.4
	1980	187.4	87.2	274.6
	1990	286.3	108	394.3
	1995	383.5	166.2	549.7
	1999	349.2	156.4	505.6
(c)Processed Foods ($ Million)	1970	16.9	6.7	23.6
	1980	88.2	34.3	122.5
	1990	155.5	51.1	206.6
	1995	220.4	85	305.4
	1999	212.6	81.8	294.4
Selected Indicators of Export Composition (percent)				
(a) Share of Processed Food in Total Export	1970	7.6	11.9	8.5
	1980	7.1	5.9	6.6
	1990	6.4	7	6.5
	1995	6.5	6.9	6.6
	1999	5.8	5.6	5.8
(b)Share of Processed Food in Agro-Food Products (including Processed Food)	1970	29.1	23.8	27.4
	1980	47.1	39.4	44.6
	1990	54.3	47.3	52.4
	1995	57.5	51.2	55.6
	1999	60.9	52.3	58.2

Source: Athukorala, Prema-Chandra and Jayasuriya, Sisira (2003).

Chapter 5
Conclusions and Recommendations

Agricultural marketing system inherits various imperfections and inefficiencies which affect its smooth operations and performance in Pakistan. Post harvest management is a related area which needs due attention of policy makers in order that profitability of stakeholders, particularly the growers is enhanced. Post harvest losses for agronomic and horticultural crops account substantial share in production, which if avoided, may enhance level of food security in Pakistan. Agricultural marketing system and post harvest management did not receive due attention of policy makers in the past. As such, meagre funds were allocated for bringing improvements in the agricultural marketing system and related institutions both at the national and provincial levels.

Intermittent crises in the marketing and distribution of wheat flour, sugar, and some other agricultural commodities highlight imperfections and deficiencies in the agricultural marketing system and post harvest management practices. Lack of appropriate storage capacity is one important aspect which has emerged as an emergent problem and needs immediate government attention. There is limited storage capacity in the public domain and that too is limited to few commodities. This handicaps the government to maintain regular supply of food stuff in the market on sustainable basis. Food crises in Pakistan have now become a regular feature of life. The situation with perishables is even worse as storage is either minimum or non existent. The concept of cool chain network is in its infancy. As such, the pace of development for the marketing of perishables is almost minimal.

Wholesale markets are supposed to perform a central role in the smooth flow of agricultural commodities but imperfections in the structure, management and operations of these markets have posed limits on their performance. Excessive domination of commission agents, lack of physical and allied facilities, non involvement of growers and consumers in market committees and ineffective market information system are some of the inherent problems of these markets which need immediate attention of policy makers.

The status of transportation and farm to market roads is also not satisfactory and results in massive post harvest losses particularly in the case of perishable commodities. Private sector operates for the transportation of farm commodities with little government involvement. The contribution of National Logistics Cell (NLC) and Pakistan Railways in the marketing of farm products has declined. Currently, NLC is overloaded and railway is not operating sufficient freight traffic due to fuel crisis. As such, the whole responsibility lies with the private sector which is operating with mixed results. The

culture of value addition through processing and diversification also lacks in Pakistan. A nominal amount of total production is processed and leaves huge surplus unutilized by market forces. Similarly, potential of livestock and fisheries sectors is still untapped. Although government has taken some initiatives to unfold potential of these sector but much needs to be done in this regard.

Agricultural economy of Pakistan is still in its transitional stage and lacks market responsiveness and orientation. Public sector involvement in the marketing of agricultural commodities is generally in the form of fixing procurement quotas and observing support prices which also is not very effective. Gluts at one time and shortages at other time are common phenomena for many agricultural commodities which causes severe price fluctuations resulting in loss of consumer and producer sovereignty and welfare. Farming community is reluctant in adopting new agricultural ventures in the absence of price incentives.

Lack of institutional coordination and implementation of legislations is also impeding agricultural economy. Duplication and overlapping of functions performed by various institutions are evident and creating ambiguities. The status of research and development is not very encouraging. This situation becomes even worst when judged in the context of week performance of extension department which is not successful in transferring research findings to farmer's fields.

Agricultural commodities encounter huge post harvest losses right from the point of production up to the consumer's table. If the surplus is handled, processed and exported after value addition, Pakistan can earn valuable foreign exchange. As such, no formal institution exists for handling post harvest management in the country. Lack of awareness and trainings to farmers and other market players further adds to problems. Unscientific harvesting/picking methods, improper transportation, handling and packaging and poor marketing practices are some other problems, causing enormous post harvest losses.

The modalities for the next Five Year Plan (2010-15) are being worked out by the government for lining up resources and other facilities to find out workable solutions in almost all spheres of social and economic domains. Working Groups comprising of professionals from public and private sectors are deliberating on different aspects. The Working Group on Agricultural Marketing Infrastructure and Post Harvest Management held series of meetings for identifying major issues in the marketing and post-harvest handling of farm products along with their workable solutions. It is against this backdrop that important problems summarized and recommendations for streamlining working of agricultural marketing system and post-harvest management practices are outlined.

5.1 General Problems of Agricultural Marketing and Post Harvest Management in Pakistan

Agriculture sector in Pakistan is beset with infrastructural and post harvest related problems. Existing agricultural marketing infrastructure is neither adequate nor capable to meet current needs of the country. It rather acts as an instrument of Post-harvest losses and also a source. Some problems in the domain of agricultural marketing and Post-harvest management are summarized.

a) Lack of Proper and Modern Wholesale Markets

Wholesale markets act as a cardinal link in the marketing chain of agricultural commodities. These markets absorb bulk of the marketed surplus and are main source of supplies to retailers in the big cities and their surroundings. Wholesale markets are increasingly playing an important role not only as major centres of price formation where coordination between production and marketing takes place, but also as an important place for introducing innovations in the marketing practices. Most of the agricultural produce passes through wholesale markets for onward distribution in the consumption areas and to meet export demand.

At present there are reported over 700 fruit and vegetable wholesale markets in Pakistan. The province of Punjab occupies the largest share followed by Sindh, NWFP and Balochistan respectively. In Balochistan there is only one central wholesale market for fruits and vegetables, established at Quetta.

Many wholesale markets were built years ago and are unable to cope efficiently with increased transactions. Serious traffic congestion, insufficient space for efficient movement of products in and out, inadequate storage and improper management are some of the major factors for increased marketing costs and physical losses of farm products. Hygiene conditions, particularly in case of fruits, vegetables and livestock are quite dismal.

Although market committees have been constituted under the provincial statutory laws and are responsible for smooth administration, operations, management and development of these markets in respective provinces, their activities are much influenced by political interests. Most market committees are unable to discharge obligations. The sole concern of market committees is to regulate markets. Unfortunately, enforcement of regulations is mostly defective and is to the disadvantage of entire marketing system.

b) Lack of Farm to Market Roads and Poor Transportation Facilities

Poor farm-to-market roads is a common feature of agricultural marketing system. These roads are often unusable during rainy months and in some cases during chilly winter. Current length and status of farm to market roads is not satisfactory. The present length

of farm to market roads (60,000 km) is crucially less than potential requirements (Government of Pakistan, 2009). There is an immediate need to increase farm to market roads length for improving farmer's access to markets. The establishment of all weather farms to market roads, particularly in the remote rural areas, should be assigned priority in the upcoming policy reforms.

High freight is charged by transporters due to poor condition of roads, which ultimately increases marketing costs, largely shared by the consumers and farmers. Non-existence of good roads limits the use of economical mode of transportation (e.g. trucks). As such, farmers and traders have to rely upon relatively less efficient mode of transportation (e.g. cart loads, small vans etc.). Poor condition of farm to market roads is also a stumbling block in introducing innovations and new technology (e.g. replacement of wooden crates with fibreboard boxes in spite of their positive impact on net returns to farmers).

c) Inadequate Storage Facilities

Inappropriate storage facilities both in the public and private sector register highest losses during handling operations. The perishable farm produce (fruits and vegetables), due to their specific nature and characteristics, require variable storage conditions. In most cases, produce (especially the perishable products) is stored in shallow pits covered with farm wastes without ventilation, without proper sanitation and preventive measures for insect and disease control. These conditions usually exist in on-farm storage houses.

This becomes more important in the light of recent food crisis (for commodities like wheat, sugar, milk, maize and meat). As stated earlier public storage facilities are not sufficient for maintaining stable supply of agricultural commodities to the stakeholders. The investment by the private sector is nominal and can be enhanced by offering special incentives (subsidy in the construction of storages). Additional storage facilities can be established at farm level and also at market levels to avoid shortages (and handle surpluses) of food stuff.

Table 5.1: Government Storage Capacity ('000' tonnes)

Agency	2006	2007	2008
1.WHEAT	**4339**	**4339**	**4339**
Provincial	3780	3780	3780
Punjab	2483	2483	2483
Sindh	709	709	709
NWFP	365	365	365
Balochistan	223	223	223
Federal	559	559	559
Food Directorate	-	-	-
AK&NA.	64	64	64
Def. Division	54	54	54
PASSCO	441	441	441
2. RICE	**826**	**826**	**826**
3. Cotton (In 000 Tonnes)	**77**	**77**	**77**
Total Capacity	**5242**	**5242**	**5242**

Source: Government of Pakistan. 2008. Agricultural Statistics of Pakistan 2007-08, Ministry of Food and Agriculture (Economic Wing), Islamabad.

d) Lack of Modern Cool Chain Infrastructure

Modern cool chain infrastructure is a prerequisite for an efficient agricultural marketing system. However, Pakistan lacks an integrated network of facilities in this regard. Post harvest losses, loss in foreign exchange earnings, price destabilization, and quality deterioration (reduced shelf life of the produce) are outcomes of absence of cool chain net-work in the country. Even the existing cold storage facilities are unevenly distributed across the country with Punjab dominating with 512 units followed by Sindh (25 units), NWFP (16 Units) and Balochistan (2 units). Most of these facilities are not compartmentalized causing odour transfer between different commodities placed within cold stores.

The existing cold stores do not have blast freezers that enable to bring down temperature of the produce to a level that can be maintained within the cold store. Its absence causes the produce to be taken directly into the cold store which loses heat within the store and deteriorates the temperature of the commodities already present in the store. In addition to cold storage facilities, storage mechanism and structure for other agricultural commodities also needs to be evaluated.

e) Lack of Post-harvest Technology and Management

Post-harvest losses still remain as one of the most pressing problems particularly for perishables. Despite advances in research, enormous quantitative and qualitative losses still occur. The extent of loss depends on how the commodity is handled from farm to the market. Studies reveal that post-harvest losses are greater than production losses. These losses are not due to a single contributory factor but associated with different factors in post-harvest operations. Lack of farmer's awareness about scientific handling of farm produce especially the perishables, aggravates this situation. High post harvest losses if avoided can contribute in marketed surplus thus increasing returns to farmers and adding to supply, bridging gap for any shortages.

f) Processing and Value Addition

Processing of agricultural commodities is performed to add value and prolong life. This is another good option to make existing supply of agricultural commodities more sustainable. An unfortunate fact about existing status is that only a nominal amount of total production is processed (3 percent of fruits, vegetables and milk) in the country. Some fruits are processed into products like jams, jellies, squashes, juices and pulp. Even many vegetables are processed by extracting moisture/water to prolong their shelf life (e.g. dry vegetables, cutlets and essence etc). There exists enormous potential of adding value to various agricultural commodities especially perishables in the country which can be exploited by inculcating entrepreneurial skills among stakeholders by offering special incentives by the Government to agribusiness entrepreneurs.

In addition role and working of food processing firms (sugar and flour mills) needs to be reviewed and regulated to avoid food crises. The recent shortage and price hike of sugar and wheat flour in the country calls for policy reforms.

g) Poor Physical Handling of Perishable Products

The typical farm products change hands from four to ten times. Initial handling is done in the field during harvest where the product is subject to various handling operations viz. picking, piling, sorting and packaging. During this process significant loss of the produce occurs. Careless loading and unloading of perishable farm produce also causes heavy losses. As such, while analysing marketing costs, significant part of total marketing costs is comprised of produce handling cost.

h) Inappropriate Packing and Packaging

The types of containers used for transporting and storing products (e.g. fruits and vegetables) vary from place to place. The most popular containers for fruits packing are wooden crates. Irrespective of the structure and properties of the farm products, a

common practice is to use whatever container is available. As a result, produce is pressed hard in the crates or carried in oversized containers causing huge loss. Packaging in prescribed containers (corrugated card board boxes) is an international trade norm/international requirement. Currently, the private sector enjoys an exclusive monopoly in the packaging material industry in Pakistan. There is strong need for offering special incentives to new entrants in this industry.

It may be mentioned that at present, there are 121 known pack houses in the country for horticulture crops. The facilities offered by most pack houses do not come up to international standards except in the case of very few which have requisite facilities and technology (see table 5.2).

Table 5.2: Existing Pack House Facilities

Commodity	No	Status
Citrus	92	90 in Sargodha - 85 Active 1 in Khanewal – active 1 in Peshawar – inactive Mostly Indigenous
Mango	4	All in Karachi 3 Certified for HWT by Iran and China 9 Plants include 5 large and 4 small
Dates	9	all in Khairpur Indigenous low-tech
Apple	1	1 in Quetta Recently activated by PHDEC
Onion, Potato	15	all in Karachi, 2 Equipped with Mechanical Grading

Source: (Government of Pakistan, 2009a) PC -1 Cool Chain System; only known number of facilities is provided in the table above

i) Non Implementation of Grades and Standards

By its very nature agricultural produce is characterized by variation in its quality. The specifications for classifying various fruits and vegetables vary and depend upon the nature of the product and requirements of the marketing system. DAPLMG and PSQCA are entrusted with the task of setting grades and standards and their enforcement. Pakistan Horticulture Development and Export Company (PHDEC) has recently taken up the responsibility of setting grades and standards for various horticultural products. Although grades and standards for the exportable fruits, such as, mango, apple and kinnow have been established but not enforced in true letter and spirit. Not only the existing grading system covers few fruits but also their enforcement is poor.

j) Lack of Agricultural Marketing Information System (AMIS)

Availability of accurate and timely marketing information plays an important role in facilitating the process of transactions. In addition, this information helps in negotiating and establishing prices for the stakeholders. Farmers are handicapped by lack of reliable information on prices and market conditions. Many farmers take the price dictated by traders or their informal financiers. Even the traders who operate in rural areas are not well informed about the prevailing prices in the wholesale markets. Even If the information is available, it is either too late or inaccurate. Information on daily prices and market arrivals are vital for farmers and village traders in planning shipment of their produce and in negotiating prices.

5.2 Recommendations

The importance of wholesale markets in the agricultural marketing system of Pakistan needs no emphasis. These markets confront many problems in the sphere of their operations, management and control. There is strong need to address various problems hindering proper functioning and development of these markets. Most of the wholesale markets in the country were established long ago to cater to the needs of population of given time, over years these markets have outlined their utility due to their location and many other inherent problems (size, design etc.). As such, there is need to establish new model markets fully equipped with requisite facilities. In this context role of market committees should be redefined and various clauses of agricultural produce market laws strictly enforced. Private sector successfully operates the wholesale markets for poultry and its products. This model may be carefully reviewed and adopted for other commodities with the involvement of private sector. In addition, Marine fisheries markets should be upgraded at Gwadar and Karachi to realize full benefits of this sector.

Recent food crisis (wheat flour, sugar, maize, rice and milk) has highlighted weaknesses in two areas i.e. storage and market information system. Available capacity and conditions of various storage houses in the country are not satisfactory and consequently result into higher losses of the produce. An effective policy for creating new storage capacity is the need of time. As such, new storage facilities at farm and market levels should be created. Besides, measures should be undertaken to establish cold storage facilities on scientific footings. The private sector should be encouraged to invest in this area by offering special incentives (e.g. zero rated imported equipments and tax exemptions). Government should further chalk out a comprehensive plan for establishing cool chain network for perishables. Punjab Agricultural Marketing Company (PAMCO) has already established one cold storage house at Lahore airport. More facilities on this pattern may be offered after carefully reviewing the merits and limitations of this experiment. A comprehensive plan should be chalked out for cool chain network for other perishable commodities (e.g. milk, meat, fruits and vegetables). Amongst others,

lack of market information available to stakeholders makes them dependent on market players who exploit them on one or the other pretext. An effective Agricultural Market Information System (AMIS) should be established by linking wholesale markets with the major producing areas through internet and other electronic media.

Proper infrastructural facilities are the backbone of an efficient agricultural marketing system. Current farm to market road network is not in a good condition. As such, full coverage of rural areas of the country is not ensured. Existing farm to market roads length is 60,000 Km which should be expanded to at least 350,000 Km. In addition existing roads should be renovated to improve their workability.

The bulk of agricultural commodities in Pakistan are traded in fresh/raw form. There is a need to change the mindset of stakeholders. New agribusinesses should be promoted for adding value to various commodities through processing at farmers door steps. In this context, the PAMCO and PHDEC may be assigned the task to accomplish the objective.

The present status of human capital, especially in the agriculture sector, is not satisfactory. Farmers and other stakeholders in the supply chain are not fully equipped with technical know-how and skills required for efficiently performing various marketing functions. New agricultural marketing and post harvest management institutions should be established with the mandate to impart technical training to the stakeholders on various aspects of agricultural marketing and post harvest management. The role of TEVTA should be redefined. Special training programs in the areas of agricultural marketing and post-harvest management should be entrusted to TEVTA with a supervisory role assigned to agriculture universities of the country.

Department of Agricultural Extension in all provinces should be reorganized and new mandate assigned keeping in view the emerging challenges in the field of agricultural marketing and international trade of agricultural commodities.

Commodity Boards were established for various agricultural commodities in the past but dissolved due to mismanagement and malfunctioning. Commodity Boards for major agricultural commodities may be re-established with the participation and involvement of private sector, keeping in mind that past weaknesses in the conduct and operations of such Boards are avoided. The new institutions should be managed on sound business footings for the welfare of farming community and other stakeholders.

Farmer’s cooperatives were established in various spheres of economics activity but experience with their working in agriculture sector did not yield good results. Nevertheless the idea still holds its validity in many countries having almost similar socio-economic and cultural traits as of Pakistan. Farmers cooperatives should be reorganized/established avoiding past mistakes. In this respect, models adopted by Nestle in Pakistan and AMUL in India can be a good starting point.

There is a need to analyse impediments in the supply chains of agricultural commodities. Research may be undertaken at agricultural universities to develop feasible supply chain models for agricultural commodities.

There is lack of effective coordination between various institutions. For instance, three institutions (DALPMG, PSQCA and PHDEC) have the mandate of establishing grades and standards for agricultural commodities. Policy measures should be adopted to enhance coordination between these institutions and to avoid any duplication and overlapping of tasks assigned to various organizations.

The planning commission, Government of Pakistan has underlined the need to establish Agro Processing Centres. It is a sound proposal. 200 Agro processing centres, as proposed, should be established across the country. PAMCO along with PHDEC may be assigned the task of establishing these centres in collaboration with private sector. In this regard, Pilot projects can be started at district level after reviewing potential requirements of stakeholders in the production areas.

There is dire need to introduce market-oriented agricultural practices. This necessitates inculcation of entrepreneurial skills among stakeholders. Federal government in collaboration with respective provincial governments should establish Entrepreneurship Centres for Agribusiness and Rural Development (ECARD) in various agricultural universities of the country. Furthermore, Agribusiness Incubators should be established at different agribusiness clusters in order to provide farming community and the stakeholders required information and new business ideas. The incubators should offer necessary technical advice, managerial know-how, information and training in marketing management, advertising, sales promotions, branding, labelling etc.

There is also a need for undertaking research on current and emerging problems in the field of agricultural marketing infrastructure and post harvest management. Agricultural universities in the country should be entrusted with this task. Private sector should be involved to make research efforts undertaken at Universities result oriented and also motivated to invest in research.

Diversification of agriculture is inevitable given the emerging trends, challenges, and requirements of international trade in the context of WTO. New agriculture ventures (floriculture, agriculture along with new avenues for value addition of agricultural and livestock products etc.) should be identified and priorities assigned in the National Plan in this regard.

The livestock sector has huge potential which may be exploited if proper investment is directed towards this sector. Policy measures should be introduced to strengthen dairy industry in the country. Punjab Dairy Development Company is already performing a good task by establishing Model Dairy farms in the province. There is a need to extend

this initiative in other provinces. In this regard, import of machinery and breeds should be declared zero rated in the upcoming Tenth Five Year Plan. There is also a need to reorganize wholesale cattle and buffalo markets keeping in view the emerging market requirements. The hygienic conditions of various Abattoirs need improvement. There is a need for establishing Abattoirs on scientific footings.

A great export potential of agro-based products, particularly fruits, vegetables and livestock products exists in Pakistan, but stringent application of international standards hamper realisation of their real potential. In particular, Pakistan is constrained in its ability to export agricultural and food products to developed countries under SPS requirements. In certain circumstances, SPS requirements are incompatible with prevailing systems of production and marketing in Pakistan. The problems, Pakistan has in complying with SPS requirements, reflect its wider resource and infrastructure constraints that limit not only its ability to comply with SPS requirements, but also its ability to demonstrate compliance. A particularly acute problem is access to appropriate scientific and technical expertise. Indeed, in Pakistan knowledge of SPS issues is poor, both within government and the food supply chain, and the skills required to assess SPS measures applied by developed countries are lacking. There is a need to impart training to stakeholders and prepare them to comply with SPS measures in the production and export of agricultural products.

Major Initiatives for Agricultural Marketing Infrastructure and Post Harvest Management

A. Development Initiatives

Name of Proposed Project	Implementing Agency	Estimated Cost
Establishment/Improvement of Wholesale Markets for Food Grains, Horticultural Products and Livestock along with Collection Points in Production Areas	MINFA/ Provincial Governments	(Rs. 10.0 billion)
Improvement of Marine Fisheries Markets at Karachi and Gwadar.	Department of Fisheries/ MINFA	(Rs 2.0 billion)
Establishment of Integrated Agricultural Marketing and Storage Infrastructure.	MINFA/Provincial Governments	(Rs. 10.0 billion)
Establishment of Cool Chain System (Processing/Pack Houses, Cold Stores, Transportation) for Perishable/ Horticultural, Livestock and Dairy Products	MINFA/ MOC/ Provincial Governments	(Rs. 15.0 billion)
Establishment of MIS for Agricultural Products (Food Grains, Horticulture & Livestock).	Department of Agriculture/ Department of Agricultural Marketing (Provinces)	(Rs. 3.0 billion)
Establishment of Quality Testing/ Certification Labs in Production Areas for Agricultural Products and Development of Grades and Standards	MINFA/ ALMA/ PSQCA/PARC	(Rs. 2.0 billion)
Development of Farm to Market Roads.	Provincial/ District Governments	(Rs. 15.0 billion)
Establishment of a) Entrepreneurship Centre for Agribusiness and Rural Development (ECARD), b) National Institute of Agricultural Marketing (NIAM) and c) National Centre for Post Harvest Management	HEC/Agricultural Universities	(Rs. 6.0 billion)

B. Policy Initiatives

- Establish Commodity Boards for major commodities with membership from public and private sectors. The management of such Boards should rest with the private sector.
- Provide incentives to potential investors in the form of credit, relaxation in duties and taxes, priority in the provision of services. Promote processing industries for major commodities.

- Promote vertical integration whereby Producer's organizations/cooperatives become shareholders in agro processing, storage facilities and related enterprises.
- Relevant institutions should be mandated for supply chain mapping and development of grades and standards.
- Introduce crop zoning for efficient production for the domestic and export markets.
- Cess fund should be levied on production of major commodities for undertaking research on emerging issues in agricultural marketing and post harvest management.

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Annexure-1: Terms of Reference of Working Group

(Plan Coordination Section)

Islamabad the 24" August, 2009

Notification

No.PC/PCS/l7(WG-9)/09. Secretary Planning Commission has been pleased to constitute a Working Group on "Agri. Marketing Infrastructure & Post Harvest Management" for preparation of 10th Five Year People's Plan 2010-15. 'Terms of Reference (TORs)' and 'Composition' of the Working Group are annexed.

2. The Chairman of the Working Group will be competent to co-opt any member(s) and also to constitute sub Working Group(s), if necessary.

3. The Working Group will submit its report to the Planning Commission by 15th October 2009.

Sd
(Muhammad Irfan Qureshi)
Chief

1. Dr. Iqrar Ahmed Khan,
   Vice Chancellor,
   University of Agriculture
   Faisalabad

2. Chief Economist, Planning Commission, Islamabad
3. All Members of Planning Commission/ Planning & Development Division, Islamabad.
4. Members/Secretary of the Working Group with the request to kindly circulate the copies of the Notification and TA/DA rules to all Members of the Group.
5. A.O (A&B) P&D Division
6. D.D.O. Vision 2030

Copy for information to:

P.S to Deputy Chairman
P.S. to Secretary
JCE (Macro)

WORKING GROUP ON AGRICULTURAL MARKETING INFRASTRUCTURE AND POST HARVEST MANAGEMENT

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2. Mr. Irfan Elahi, Secretary, Food Department, Government of Punjab, Lahore-- (Co-Chair)
3. Mr. Shamon Sadiq, Ex-CEO, PHD & EB, Lahore
4. Major Gen. Anwar Saeed Khan, Managing Director, PASSCO, Lahore
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20. Mr. M. Hashim Laghari, Horticulture specialist (F&A Section), Planning Commission (Member/Secretary).

TERMS OF REFERENCE (TORs):

1. Reviewing existing marketing system of agricultural commodities (wheat, rice, cotton, sugarcane, oilseeds, pulses, horticulture products, milk, meat, etc.) and to recommend strategies/policies for improvement in it.
2. Review existing regulatory arrangements for ensuring quality of inputs/outputs, and making recommendations for compliance with SPS requirements and promoting exports.
3. Examine adequacy of existing storage/cool chain infrastructure and recommend public policy interventions, institutional arrangements and investment for enhancing this capacity and reducing post harvest losses.
4. To suggest measures for containing food inflation and protection of consumer rights i.e., marketing margins analysis and contents disclosure.

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