



POSTHARVEST INSTITUTE FOR PERISHABLES

**A COMPARATIVE ANALYSIS OF FRUIT AND VEGETABLE MARKETING
IN DEVELOPING COUNTRIES**

by

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College of Agriculture, University of Idaho**

for the
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A COMPARATIVE ANALYSIS OF FRUIT AND VEGETABLE MARKETING IN DEVELOPING COUNTRIES

CHAPTER I

INTRODUCTION

This report has been prepared by the Postharvest Institute for Perishables, University of Idaho under a subcontract agreement with Sigma One Corporation, Inc.

The objective of the report is to provide information designed to help the Bureau of Science and Technology of the Agency for International Development (AID/S&T) develop a program of research and technical assistance activities in the area of fruit and vegetable marketing to promote agricultural development in low-income developing countries.

The approach chosen for the preparation of this report is to first discuss the role of marketing in the development of a fruit and vegetable industry in developing countries. This section of the report presents the: (1) optimal required conditions which must exist if a higher level of development is to be achieved; (2) reasons why the effective and efficient performance of the functions of marketing is critical for supporting a development program; (3) potential contributions that an effective marketing system can make to the development process; and (4) conditions which must be ensured if an effective and efficient marketing system is to be created to support the development process. In short, this section of the report sets the stage for an analysis of fruit and vegetable systems in low-income developing countries as it is related to achieving desired end results which will enhance the overall development process.

The second section of this report discusses the evolutionary process of fruit and vegetable systems in low-income developing countries. This section is presented in two parts: (1) the factors, forces or events that cause the need for change in marketing systems for fruits and vegetables; and (2) the changes which take place and the problems which typically occur as the various factors and/or forces interact and dictate the need for change in fruit and vegetable marketing systems.

The third section of this report reviews recent experiences and the current situation in the organization and performance of the fruit and vegetable marketing system in Jamaica and Sri Lanka. Comparisons will be made of the development of the two marketing systems, and the advantages and disadvantages associated with the various marketing innovations initiated in each country will be identified.

The final section of this report presents the conclusions relating to: (1) the critical factors affecting improved performance of fruit and vegetable marketing systems in developing countries; (2) recommendations for priority market interventions required to develop efficient and effective marketing systems; and (3) areas of research and technical assistance that should be initiated leading to the provision of more effective assistance in the future development and evolution of fruit and vegetable marketing systems in developing countries. Finally, comments and recommendations are presented on the "Rapid Reconnaissance Guidelines for Agricultural Marketing and Food Systems Research in Developing Countries."

CHAPTER II

THE ROLE OF MARKETING IN AGRICULTURAL DEVELOPMENT

Optimal Conditions for Agricultural Development

Agricultural development projects in developing countries have been traditionally designed to increase production, preferably at decreased per unit costs. The results expected from the achievement of this goal included increased availability of food, (hopefully at less cost to consumers), increased farm incomes and generally increased economic activity in the country. Unfortunately, little attention has been given to determining which commodities will satisfy consumer needs and desires (attention is placed on which commodities are best suited to soil types, rainfall, growing conditions, etc.), and to how products are to be provided to consumers at the time, at the place, in the form and at a price the consumer is willing and/or able to pay. Failure to consider these factors has adversely affected many agricultural development projects.

In order to achieve any desired level of agricultural development related to fruits and vegetables, three conditions must exist:

1. The fruits and vegetables produced must be marketable, i.e., acceptable to and desired by end consumers and supplied to consumers at a price they are willing to pay.
2. The fruits and vegetables produced must be marketable at a price which exceeds the cost of production over the long run.
3. There must be an infrastructure in place to move fruits and vegetables efficiently and effectively from the place of production to consumers in such a way that they reach them at the time, at the place, and in the form desired.

It is obvious, when one accepts the above three conditions, that the marketing of and the market for the production of fruits and vegetables become the critical elements of successful agricultural development.

In many third world countries, marketing of fruits and vegetables has generally been considered to be the function of disposing of surplus production. Those directing the typical agricultural development process increased production and then expected a market to exist for this production; if it did not, the marketing system was regarded as a constraint to the development process. This traditional view of marketing is classified as the production oriented approach to marketing. However, it is not appropriate if proposed agricultural development programs in third world countries are to have any chance of success. What is needed, and in fact is critical to the success of agricultural development programs, is a market-oriented approach to production.

The market oriented approach to production simply means that production capabilities, resources and facilities must be organized and planned to produce what the end consumer desires. This requires that agricultural producers respond to consumer demand rather than merely attempting to sell what they produce.

The Marketing System

Consumers, whether they are domestic or international, purchase products that satisfy them more than do competing uses for their limited incomes. Thus, it is imperative that the production/marketing system for fruits and vegetables supply a product which provides satisfaction at a price the consumer is willing to pay.

To accomplish this task, the production/marketing system must provide a product which fulfills three types of satisfaction, or--as economists call it--utility.

1. Place Utility which moves the product from where it is produced to where the consumer wants it. This involves various marketing functions, including assembling or collecting fruits and vegetables from farms, transporting to wholesalers and distributing to consumers.
2. Time Utility which provides the product at the time the consumer wants it. This involves storage, warehousing and the processing of fruits and vegetables into a form that preserves the product until demanded at a later time.
3. Form Utility which changes the form of a product to make it more useful to the consumer, e.g., wheat into flour. This involves the marketing functions of processing and standardization.

A number of additional functions facilitate the effective operation of the fruit and vegetable marketing system, including buying, selling, financing, risk bearing, market intelligence and market research. A marketing system that effectively and efficiently performs all of the marketing functions is a system that will enhance the probability of success for any agricultural development initiative.

Contributions of the Marketing System

An effective and efficient fruit and vegetable marketing system can contribute to overall agricultural development in a number of ways:

1. It can reduce transaction and exchange costs between producers and consumers, thus reducing the cost of fruits and vegetables to consumers and/or increasing the incomes of the producers.
2. It can reduce risks by providing adequate market information flows among the various participants of the system, thus making all participants more knowledgeable of supply and demand conditions, product movements, prices, etc.
3. It can provide the organizational framework necessary to coordinate production and consumption, thereby reducing the likelihood of periodic gluts and shortages by rationing the supply of fruits and vegetables to consumers in response to their expressed needs and desires.
4. It can make available to consumers new products and/or improved products that can enhance the nutritional status of their diets.

5. It can provide ways and means to bring subsistence farmers into the exchange economy by providing mechanisms for collective action, and/or introduce technology adaptable to marketing on a small scale.
6. It can reduce consumer costs and/or make additional quantities of fruits and vegetables available to consumers by initiating institutions, facilities, and technology designed to reduce postharvest losses in the marketing channels.
7. It can, as development occurs and the marketing system expands, provide opportunities for increased employment and income within the rural and urban sectors of the economy.
8. It can, through appropriately designed research efforts, provide participants in the system and policy makers with the necessary information to make timely adjustments, thereby preventing problems that might disrupt the orderly flow of fruits and vegetables from producer to consumer.

Conditions Required for Effective Marketing

In order to facilitate the above contributions, an efficient and effective fruit and vegetable marketing system must consist of: (1) effective support services; (2) an adequate and efficient market infrastructure; and (3) an adequate and effective policy framework for the regulation and incentive programs required by the system.

Support Services

Support services include various institutions, activities and programs conducted by the public and/or private sector that are designed to create a climate conducive to efficient and effective operation of a marketing system for the production of fruits and vegetables. The specific support services discussed in this report are: research, extension, market intelligence and information, market regulation, and financing. A brief discussion of the role of each of these support services is presented below:

Research: Adequate marketing and adaptive production research is a necessary condition, and in fact, prerequisite to an effective and efficient fruit and vegetable marketing system. Research generates knowledge, and knowledge is imperative to the decision making process. Decisions, based on a sound foundation of research and on more complete knowledge of the potential impact from alternative courses of action, become rationally oriented decisions. Without research, decisions tend to be based on intuition and very little evidence of possible outcomes.

Various types of marketing research are required, depending upon the potential user of the research, e.g., policy-makers, farmers, and market intermediaries.

Policy makers need research to support the development of sound marketing policies, adequate support services and efficient fruit and vegetable marketing programs. Research must include short and long range projections of potential social, economic and perhaps environmental impacts from alternative marketing and production policy initiatives on price levels, potential supply

and demand responses, profit levels at various levels of the production and marketing system, employment levels, etc.

Farmers need marketing research to assist in decisions regarding what to produce, how to produce, and when to produce, as well as how, when and where to market their production of fruits and vegetables. The types of research required include cost of production, potential demand for alternative crops, potential supply available, estimated price projections, types of markets available (including costs and returns that can be expected from each market), and available alternative methods of marketing fruits and vegetables and their cost.

Market Intermediaries need market research to guide their decisions regarding buying, selling, transporting, storing, and packaging the fruits and vegetables that they handle. The types of research required include costs of various marketing functions and the benefits derived from performing them, quality and quantity demands of consumers (including any seasonality of demands), supply potential and locations of supply, and analysis of existing and alternative technologies available for use in the marketing of fruits and vegetables.

In addition to research designed to evaluate the structure, performance and conduct of the fruit and vegetable marketing system, postharvest loss reduction research is critical to the efficient and effective marketing of fruits and vegetables. The perishability of fruits and vegetables subjects them to potential loss during harvest and throughout the marketing process. Further, conditions of transport, availability of packaging materials, adequacy of storage facilities, and limited knowledge of product handling technology in many developing countries further subject fruits and vegetables to potential loss. Research is essential to limit these losses and, in turn, reduce costs of marketing and increase the quantity and/or quality of fruits and vegetables to consumers.

Finally, production research (e.g., plant breeding, variety development, etc.) must be market oriented. That is, varieties must be developed with characteristics desired by the consumer. Although this is required for fruits and vegetables entering any market, it is particularly critical for entering the export market because consumer tastes and preferences many times are very different in a foreign market from the domestic market.

Extension: Extension, by definition, is the activity which extends (disseminates) research results to potential users. In addition, extension is an educational activity designed to inform potential research users of the how, why, when and where of research application to enhance their operation. Further, extension is responsible for relaying the research needs of its clientele to researchers and assisting clientele in solving existing or potential operational or functional problems relating to the utilization of this research.

Traditionally, extension personnel and programs have been primarily production oriented; i.e., personnel are trained in production oriented areas, and programs are designed to assist farmers in increasing production and perhaps increasing the efficiency of production. This is especially true in developing countries which are attempting to make more food available to their

people. As countries progress in development, the marketing of fruits and vegetables, and particularly the need to match production to consumer demand, becomes critical to further development. The problem at this point becomes one of either reorienting existing extension activities to marketing programs or initiating a new component of the extension organization, i.e., marketing extension.

Effective marketing extension programs must provide information to the various participants in the fruit and vegetable marketing system (farmers, market intermediaries and consumers) in the following areas:

1. Marketing principles, functions, institutions and structure, including application, use, costs, benefits, efficiency, effectiveness and alternatives;
2. Marketing methods, channels, pricing, outlook and other technical information that will assist participants in the marketing system to implement most effectively the exchange and distribution of fruits and vegetables from the farm to the ultimate consumer; and
3. Availability and use of harvesting and postharvest technology, including grades and standards to ensure consumers receive the quality products they desire and to minimize postharvest losses during the marketing process.

Market Intelligence and Information: Market intelligence and information plays an important role in improving the efficiency of the market by informing all producers, market intermediaries and consumers of the situation regarding price and supply. The economic concept of an efficient market is one in which buyer and seller have perfect knowledge of the conditions attached to each transaction. In underdeveloped societies - whose transactions take place directly between producer and consumer within the same geographic area - something approaching this condition can be achieved. As society evolves to the point where producer and end user are far apart and linked through a complex system of primary buyers, transporters, wholesalers and retailers, and where the producer can choose to use various channels to satisfy the ultimate consumer, information systems must be provided so that no single operator can take advantage of the other.

The market operators' need for information is paralleled by that of policy makers who attempt to allocate national resources to the maximum benefit of the citizens, and by that of administrators who execute the policy.

The market intelligence system designed to satisfy all these needs must be timely and relevant to the needs of the users. For the producer, consumer and the intermediate wholesalers and retailers, immediacy is vital. For the policy makers and administrators speed is less important than accurate data, as well as sound analysis and interpretation which highlight the implications of changes in market conditions.

Market Regulation: In support of marketing efficiency is the need for a degree of regulation so that the buyers understand what they are buying, not only in terms of the commodity, but also its weight and quality.

The standardization of weights and measures and the verification of weighing equipment is standard practice in many countries. A system of grades and standards for fruits and vegetables is often much less well developed for products which are principally supplied to the domestic market. The need for accurate grade standards which ensure that the buyer can bid with confidence on description becomes important as distances between seller and buyer increase domestically, or internationally if an export trade develops. The most important purposes served by grades and standards may be summed up as:

- a) providing a common language between producers, buyers and consumers.
- b) providing precise standards which are indispensable in settling disputes between buyer and seller.
- c) forming the basis for market surveys and prices utilized and published by market news services and for meaningful price analysis.

Financing: Although credit schemes aimed at increasing production of fruits and vegetables are common phenomena of agricultural development programs, finance aimed at marketing is less common and in many cases nonexistent. As a fruit and vegetable marketing system develops, financing may be needed during the performance of any of the marketing functions, e.g., grading, packaging, transport, storage, processing, etc. Financing may be needed by a private trader, or it may be needed to assist a group of farmers in forming an association to undertake one or more of the marketing functions.

Infrastructure

Infrastructure refers to the physical attributes of a marketing system that influence the flow and interrelationships within the system. It includes transportation facilities and marketing institutions and premises that influence the performance of all marketing functions. Changes in infrastructure can often significantly improve marketing performance if properly planned and implemented.

Institutions: The marketing channels for fruits and vegetables in most countries are usually very complex in offering a variety of routes for producers to supply the end-user. A marketing system must be developed when a society grows from a degree of specialization of function within one community where the producer and the consumer were in direct contact, to one where a large number of dispersed producers are supplying the needs of a large number of consumers at some distance away. In some cases the consumers are in large conurbations and in others are almost as dispersed as the producers but unable to produce the commodities themselves. Thus, they require the assembly of produce from the production area and the redistribution to consumption points. This requires the assistance of traders at various levels, including farm-level collectors who save the farmer the task of transporting produce to market himself, as well as wholesalers who assemble quantities large enough to satisfy large urban populations and redistribute these to the retail trade.

The trading community fulfilling the tasks of transfer, assembly and redistribution also relieves the farmer to some degree by assuming the functions of grading, storage, risk bearing, seeking a market and financing

the marketing operation. Thus, the farmer is free to concentrate on the techniques of production. The trade also acts as the primary channel for communicating customers' wishes to the farmer.

Physical Infrastructure: Clearly, for the marketing system to operate efficiently, the physical facilities have to be appropriate to the commodities, the climate, the distances involved, the farm types, and marketing methods.

Marketing Premises should provide buyers and sellers at all levels of the fruit and vegetable marketing system, beyond the farm-gate, an adequate area for the display and selection of goods, and a storage/grading area in which goods can be prepared. The premises should be hygienic with adequate water supplies, washing and toilet facilities, garbage removal arrangements and pest control measures. The site should allow free traffic flow both for incoming goods as well as onward distribution of goods. Particularly important is the need to provide only those services considered to be essential and to design these facilities at minimum cost. Otherwise, charges for the use of these facilities may be greater than the benefits perceived by the users, and the facilities will be underutilized.

Transport is a critical function in the marketing of fruits and vegetables. Refrigerated transport often is advocated, but is frequently too expensive to be justified. Capital outlay and maintenance costs are high and the type of goods available for back-haul do not always require refrigeration.

Road construction and maintenance, while beyond the control of the operators in the marketing system, can play a considerable role in the cost to society of the products which are transported over them. This is particularly so for perishable fruits and vegetables, which can be damaged in-transit over rough roads, or can deteriorate in quality during transit over long distances. Further, vehicles traveling rough roads can receive considerable costly wear and tear, which will increase the transportation costs.

Exports depend upon good sea and air facilities. Sea transport is normally confined to lower value, less perishable items (potatoes, yams) or large scale export of fruits or vegetables held in refrigerated or controlled atmosphere conditions. This type of trade has developed world wide, and port facilities are available in many developed countries for containerized handling, customs clearance, etc. However, developing countries may or may not have containerized handling facilities.

Air freight is used for lower volume, high value, highly perishable fruits and vegetables. Many countries have fruits and vegetables which require rapid transit but lack suitable holding areas and handling facilities at the airport. Investment in these facilities must precede any serious exporting program, otherwise a vital link is missing.

Marketing Policy

Policy may be defined as direct government actions which delineate guidelines for achieving predetermined national goals. National goals related to agriculture usually include raising farm incomes and rural family standards of living and protecting consumers against high food costs. In connection with

these aims, other goals may be established which directly affect the direction agriculture might take. These goals might include: increase foreign exchange (which will direct agriculture toward the production of exportable crops); or, import substitution designed to conserve foreign exchange (which will direct agriculture toward producing crops that will replace imported crops); or, achievement of self-sufficiency in the production of certain crops (which will direct agriculture toward increased production of these crops, many times in a situation where world prices are well below domestic cost of production).

It is very obvious that, depending upon the national goals established, a wide array of policies may have to be initiated to adequately guide the nation toward achievement of its goals. Invariably, established policies could lead, and generally do, to conflicts and often produce undesired effects elsewhere in the overall economy. This is particularly true when policies are established on an ad hoc basis and implemented with little or no assessment of their impacts on the specific sector involved or elsewhere in the economy. Quite often this situation arises when: (1) a policy is initiated in an emergency situation in an attempt to solve an immediate problem; (2) adequate data is not available to conduct a thorough analysis of potential impacts, particularly the economic, social, and perhaps environmental impacts, and (3) there is a multiplicity of ill-coordinated policy-making bodies. These situations exist in many countries, but perhaps are most evident in developing ones.

Successful policies are those introduced in a coordinated and timely manner after full consideration of the potential impact on the immediate problem and on the other related sectors of the economy, based upon an accurate data base and analysis. Thus, a critical prerequisite to the establishment of "workable" policies is a sound data base for use in the analysis of potential impacts and likely effects. Even if these conditions are met, however, there is no assurance that any given policy will be 100 percent successful. This is particularly so in today's society where international events can have significant effect on domestic actions. Thus, adequate policy measures will be those which are monitored, evaluated and, if the situation warrants, revised periodically.

CHAPTER III

THE EVOLUTIONARY PROCESS OF FRUIT AND VEGETABLE SYSTEMS

The Need for Change

There are numerous reasons for changing fruit and vegetable marketing systems, most of which relate to the conditions required for agricultural development in general and for effectiveness and efficiency within the marketing system itself. These conditions were discussed in the previous section of this report. In summary, the primary needs for change in fruit and vegetable marketing systems are:

1. The most important factors affecting future demands for marketing services, (i.e., the need for change) are population growth and location, and the level and distribution of income within the developing country. In most developing countries economic opportunity in rural areas sooner or later becomes limited and a shift toward urbanization occurs, i.e., rural residents move to urban areas to find employment. This is particularly so as arable land is expensive and in short supply. Then, agrarian societies develop and shift toward urbanization. As this shift occurs, the traditional marketing of fruits and vegetables, in which transactions take place directly between producers and consumers within the same geographic area, changes to where the producer and consumer are far apart. This creates a need for further transport, improved techniques of reducing postharvest losses due to longer transit time, and an indirect transfer of product from producer to consumer.

Normal population growth in a country, and the fact that urban families are less likely to produce food for their own consumption as they did when they were rural residents, requires the movement of additional quantities of fruits and vegetables through the marketing system. This requires growth adjustments in the marketing system.

As incomes increase in a developing country, residents tend to demand more services related to the food products they consume, for example: cleaner, higher quality, easier to prepare products. They also tend to demand a broader line of products, particularly vegetables and fruits. These demands place additional pressures for change on the traditional marketing system. On the other hand, income increases in some developing countries have either not occurred or have not reached the point where the demand changes have taken place. Thus, the pressure has not affected the traditional system.

In some cases, fruit and vegetable marketing systems evolve over time to accommodate the types of conditions which develop from the changes in population growth, location, income levels and distribution. However, this change is usually very slow if left to develop without assistance in some form. Usually, as the marketing system changes, many inefficiencies develop due to the "learn by doing" method of change and political ramifications. Thus, a second need for change arises.

2. As the demand for increased quantities of fruits and vegetables and for increased services associated with marketing of fruits and vegetables

evolves in a developing country, it is soon recognized that logistical systems and institutional arrangements are inadequate to cope with the situation. In many cases producers are not provided with incentives through the pricing system to increase their production and particularly to improve the quality of the products they produce. The road system, transportation links, etc. are found to be inadequate to speedily handle increased quantities of perishables from producers to the distant urban markets. Facilities for handling, grading and packaging are inadequate for assuring that quality fruits and vegetables reach the consumer. Storage and processing facilities are insufficient to permit desired price stabilization, and market information flows are inadequate to prevent gluts and surpluses and the resulting violent price variations. A means for providing for the credit needs of the market intermediaries is usually non-existent to inadequate. This lack of credit greatly restricts the ability of these intermediaries to accomodate change.

Accompanying the inadequacies which evolve in the marketing system is the fact that, in most cases, the ability of the participants in the marketing system to eliminate these aberrations is very limited. Further, because most governmental supported research and extension programs have traditionally been oriented toward production, the expertise is not available to provide participants with technical assistance and training for the purpose of making the system more effective and efficient.

3. In most developing countries, the government sooner or later enters into programs designed to improve standards of living for its population through economic development. These programs generally are structured to increase employment and income, increase and/or stabilize the food supply, improve the nutritional status of the population, and increase purchasing power for goods not produced domestically. Most of these programs are designed to increase domestic agricultural production and regulate imports and exports. Unfortunately, changes needed in the marketing system to accomodate the results of increased agricultural production have generally not been considered in the original design of the development program. In cases where the need for a marketing system, or a change in the existing marketing system has been recognized, it was generally assumed that a clear dichotomy existed between marketing and production and that the marketing system required by the production system could be developed independently. Further, in most cases, it was not fully realized that the design of the marketing system depended upon numerous factors, including historical, political and social factors, the stage of production development, and, in particular, the level of expertise available in the government and/or private sector.

Change and Problems Associated with Change

Change in fruit and vegetable marketing systems, in the absence of some form of intervention, proceeds at a very slow pace. Interventions to speed up the process of change can be initiated by either the private or public sector. However, in most developing countries, incentives, particularly pricing incentives, are insufficient to motivate the private sector to initiate significant changes. Thus, the public sector usually must be called upon to stimulate the process of change.

Actions of the public sector designed to bring about change in the fruit and vegetable system can be: 1) direct intervention, such as the use of marketing boards, buying stations, retail outlets, etc. or 2) indirect interventions, such as providing support services, improving the infrastructure, initiating various market regulations and setting marketing policies designed to ensure orderly marketing. Direct intervention by the public sector has in general had little success in bringing about an efficient and effective marketing system. Indirect intervention through such actions as: providing market information; financing capital needs; improving infrastructure; initiating and enforcing grades and standards; providing research and extension programs; providing market development assistance, particularly for export; providing tax incentives; controlling imports and exports; etc. have had varying degrees of success.

The following are given as examples of the types of changes required and the problems that arise with the change.

Provision of Market Information

As a marketing system evolves, a critical element of that system is the provision of market information to the participants of the system. A number of problems surface as market information systems develop:

1. Often the information collected does not adequately reflect quality differences and supply conditions--only price is reported. Prices alone are next to useless without other important data and at the least can greatly mislead the users of this information.
2. Data many times is collected without use of appropriate sampling methodology. This results in inaccurate data, and inaccurate information can be worse than no information.
3. Many times significant resources are devoted to developing elaborate information collection systems with no provision for disseminating this information to producers and market intermediaries. An informal system is generally set up to disseminate the information among government agencies so that the information can be utilized in policy making. However, no attempt is made to disseminate to users in the marketing system down to the grass roots level. Under these circumstances, a market information system will not assist orderly marketing.
4. Generally, there is a lack of understanding of the difference between market information and market intelligence. Market information is the result of collecting data regarding supply, prices at various levels of the marketing system, quality available, etc., while market intelligence involves analyzing this data and forming conclusions about what the data means. Many times data is collected and no analysis is made, while other times the methods of analysis are more sophisticated than can be justified by the data. In either case, the information presented to the decision makers has limited use. A total market intelligence program must ensure that the decision maker first receives useful information, and then is able to synthesize the information so that it provides useful input to the decision making process.

5. Often, a distinction is not made between market information for short run decisions (when, where and how to sell) and long run decisions (what to plant). Both types of information are required to facilitate orderly marketing--but in most countries, the primary, and in many cases the only, emphasis is placed on short run decision information, i.e., market movements, prices, etc. This is generally due to recognizing the high degree of perishability of fruits and vegetables and the need to make timely decisions on marketing. However, the glut and shortage problems can only be prevented with adequate information before the production decisions are made.

Quality Assurance

Grade standardization is a communication device which becomes useful as a market economy develops. It is important to standardize fruits and vegetables concerning quality, size and unit of weight in order to realize exact transactions between buyers and sellers. The usefulness of standardization depends not only on the degree of commercialization of the market place, but also on the willingness of market participants, from the producer through the consumer, to use it. This willingness cannot be taken for granted--which it has in many countries.

Rejection of grading by market participants may indicate that: 1) development has not proceeded far enough to make standardization useful (an informal grading system usually exists under the most primitive marketing system and generally works fairly well); 2) the usefulness of grades and standards is not understood, i.e., farmers, market intermediaries and consumers must be made aware of the benefits and costs of ensuring quality fruits and vegetables; or 3) some influential market participants feel that standardization is a threat to their market power.

In short, policy makers must have the objectives of the proposed grading programs clearly in mind, and they need to understand how various market participants will perceive it as a help or hinderance to their market position.

Postharvest Loss Reduction

The scope of improving the marketing of fruits and vegetables, especially by reducing postharvest losses, is extremely broad. There are limits, however, to the introduction of new technology by the extension of local know-how, level of organizational development, by the cost of introduction and implementation in relation to scale of enterprise and consumer ability to pay for the use of the technology, and sometimes by considerations of a social nature.

For example, there are many examples of the introduction of advanced, labor-saving technology designed to reduce postharvest losses of fruits and vegetables that are justified in project papers from a macro standpoint, but are simply too expensive for private enterprises to justify in an economic sense. Further, "top of the line" technology was often used where less expensive, relatively simple technology would have sufficed and at a cost private enterprise could justify. In these cases, the more elaborate technology is intended as a "show-case" for the government or donor agency

but, in fact, usually ends up as a "white elephant."

Fruit and Vegetable Processing

In many countries, processing of fruits and vegetables is proposed as a method of eliminating seasonal gluts and/or as a means of providing products with export potential. The processing venture has been both successful and unsuccessful. The successful ventures have been a result of the opportunity to provide year round availability of certain highly seasonal fruits and vegetables or to provide a speciality type product for export. However, a major problem in these cases has been the difficulty of obtaining reliable supplies of desired quality of fruits and vegetables at reasonable prices. Farmers attempt to sell on the fresh market (which is usually higher in price) and what's left over is available to the processor. Attempts to ensure a reliable supply through contractual agreements may conflict with local custom. In many countries, historical conditions cause producers to oppose contracting, while in other countries a contract really does not mean anything. Further, processors have had difficulties in getting farmers to plant varieties, generally new to the farmer, that are desirable for processing.

In other countries, processing fruits and vegetables has been proposed as a means of reducing loss due to the perishability factor, and of making use of off-size, off-shape, overripe fruit. Further, processing will create employment opportunities for idle farm labor, particularly in the off-production season. Seldom, however, can a processing operation succeed when it must rely on a product that is in surplus, or available due to non-acceptability in the fresh market. There are also examples of processing facilities initiated for reasons stated above, but in a country that either has a seasonality of production that provides a product in fresh form almost year-round or where competing products are available through the year. This is particularly true in tropic regions where different fruits are in harvest throughout the year and are substituted in consumer diets.

Collective Marketing

In most developing countries, the production of fruits and vegetables is widely scattered geographically, and small scale farms or firms operating with relatively low levels of technology carry on nearly all phases of production and distribution. A frequently proposed solution to the problems resulting from these conditions is to organize a local producer association to improve the assembly market function, stimulate efficient production methods, and provide the means of putting together larger volume shipments of uniform quality and properly packaged fruits and vegetables for movement to the market place.

Varying degrees of success have been experienced with these producer associations. Some have been very successful and some complete failures. The failures have resulted from a number of factors: 1) producers had no knowledge of marketing beyond the farm gate and thus were not prepared to enter the system and provide the functions required to adequately market the product; 2) producers were unable to reorient their traditional operating procedures such that they would fully participate as a member of the association, particularly in obligating their produce to the association; and

3) the association was at odds with the traditional marketing system in that it had to compete with an established system of traders that were related to producers or were in many cases family members of producers, and so producers would not switch to the association.

Government Policies, Regulations and Incentives

Government policy formulation is an extremely complex process and must be undertaken with thorough analysis of reliable data, taking into consideration all potential impacts, if it is to be effective in achieving the goals it was formulated to achieve. Typically, a wide array of policies, regulations, incentives, subsidies, tax levies, etc. are utilized to enhance the development of marketing systems for fruits and vegetables.

There is a strong tendency for policies to conflict, which often produces undesirable effects. Further, the effectiveness of various government actions are limited because: 1) marketing firms may not be aware of how to take advantage of them; 2) these interventions are many times inappropriately implemented, (e.g., poor timing or failure to consider that changing situations require changes in specific actions); and 3) the government fails to involve the private sector (the sector impacted by the intervention) in planning, developing and implementing the action.

In addition, it is not uncommon for a multitude of government agencies to be involved with setting interventions, usually each agency setting these interventions without consulting any other agency. The result is actions at cross purposes and a high degree of uncertainty in the private sector.

Government policies, regulations, incentives, etc. often closely intermesh to inhibit efficient marketing systems for fruits and vegetables in developing countries (much evidence indicates that this is true in developed countries as well). Government policies spawn interventions that are many times disincentives to participants of the marketing system. Examples include export taxes, government import/export monopolies on key commodities, government marketing boards competing with the private sector, and regulations that tend to discourage investment and expansion of the marketing system by the private sector.

Some examples of policies that stifle the development of marketing systems:

1. Grenada placed an 18 percent export tax on nutmeg and cocoa, the major foreign exchange earners for the country. The tax tended to price Grenada out of the international nutmeg market and returned minimal returns to growers. Because of this disincentive, growers refused sometimes to harvest their crops and did not properly maintain the trees, which in turn reduced yields. A repeal of the tax by the government was a strong incentive for producers to harvest their crop and properly maintain them for maximum yields.
2. In the Caribbean, marketing boards have been a prominent part of the marketing system in a number of countries. Many of these boards have become involved in regulating exports or imports of key commodities. Some have even set up retail outlets to sell locally produced fruits and vegetables at their buying stations. These marketing boards are set up to

purportedly offer key food items to consumers at fair prices and to purchase farm production at fair prices to producers. What in fact happens is that marketing boards are strong disincentives for local people to become involved in the marketing system. These boards may buy at exorbitant prices (to appease producers) and sell at lower than cost (to appease the buyers). Although there may be political advantages in such interventions, economically, they reduce competition and strongly discourage local entrepreneurs from becoming involved in the system.

3. The Philippine government developed a slightly different version of marketing boards, but with the same results as experienced in the Caribbean, i.e., providing disincentives to participation and investment by the private sector in the marketing system for fruits and vegetables. The National Food Authority Food Terminal, through policies enacted by the government, set up a plan to compete with the private sector in importing, exporting, processing and retailing food products. The government monopolized imports and exports of key products to and from the Philippines in order to partially support other inefficient competitive components with the private sector.

The result was increasing antagonism between the government and the private sector instead of encouragement and incentives that should have been directed by the government to the private sector. The total cost of the exercise was not known because of government manipulation of cost figures, but considering the economic disarray in the Philippines it must have been high.

To facilitate the adoption of new and improved marketing methods, participants of the marketing system must be made aware of both private and social gains that can result. In addition to public actions to facilitate improved market relations, reduce risk and stimulate innovations, actions may be needed to assist the private sector to adopt technology that results primarily in social gains. These actions take the form of various incentives which, although initiated with good intentions, sometimes act as disincentives:

1. Every developing country has from time to time enacted various regulations designed to promote more orderly marketing, while other regulations may have been enacted for political reasons rather than economic reasons. For example, some regulations are used by corrupt forces to extract money from the private sector, while others were instigated many years ago and have outlived their usefulness. Regulation on exports of various commodities might have been a necessary tool to alleviate temporary food shortages, but, in many instances, these regulations tend to remain in force, resulting in disincentives to traders in completing trade transactions. Perhaps one of the most promising incentives to the private sector would be to review regulations in force and eliminate the unnecessary regulations to free up the private sector to carry on its marketing functions in a competitive situation.
2. Governments many times provide subsidies to encourage the production of crops singled out by the government as critical to either achievement of self-sufficiency (this is usually for basic food crops, particularly cereals), export to generate foreign exchange, or import substitution to conserve foreign exchange. Many times, the economics of these crops would

dictate reducing production of the subsidized crops--this is particularly so where traditional crops are subsidized because they have been grown for years and producers have grown to rely on these crops, but they are no longer profitable enterprises. The subsidization of these crops has tended to reduce funds available for other needed areas of agricultural production and marketing and has tended to keep land out of production of crops, particularly fruits and vegetables, that have a comparative advantage for producers. Governments typically do not evaluate the subsidy system with a view toward deciding whether the country would be better off to import a specific commodity rather than subsidize its domestic production.

3. Perhaps the most promising action that governments of developing countries can initiate would be including the private sector in planning, developing and initiating food policies. For one reason or another, the private sector is normally left out of the economic planning process, particularly the process involving agricultural production and marketing. This occurs in spite of the fact that the private sector produces, harvests, transports, stores, processes and sells the majority of the agricultural commodities in most developing countries.

It is essential at this point to relate an additional constraint to most government interventions designed to improve fruit and vegetable marketing systems. World wide, the local market place in remote areas is the core of the community and the surrounding region and is a reflection of local economic behavior and linkage. The patterns of social obligations and rights and patterns of behavior linking the agricultural producer/seller with the transporter/trader must be understood if market interventions are to be given any chance of success.

Further, the stable food psychology is pervasive among subsistence farmers, and farmers are unlikely to take the risk of switching much of their land to a new crop without first providing the stable foods for the family. Farmers are aware of the vagueness in government policy, and past experience counsels caution. Changing institutions to meet developing needs in an agricultural society will occur successfully when an integrated approach to the rural population and its problems is formulated and implemented at the rural level. Development involves people, their modes of behavior and newly emerging senses of identity. These factors must be thoroughly considered in the pre-project analysis of the situation. In many cases they are not considered, or if they are, they are ignored in the project design. This has resulted in limited success and in some cases failure of the development project.

CHAPTER IV

APPROACHES TO REDUCING PROBLEMS ARISING FROM CHANGING MARKET SYSTEMS

This section of the report gives a brief overview of the characteristics, organization, performance and problems of the fruit and vegetable production/marketing systems of two countries--Jamaica and Sri Lanka. It also presents the various marketing interventions and the reasons for success or failure of these interventions, that have and are being attempted to create more efficient marketing of fruits and vegetables.

JAMAICA

Small Farmer Production

Over 80 percent of farm units in Jamaica fall into the under 5 acre size classification (about one-third under 1 acre and 50 percent in the 1-4.9 acre size group). These small farmers produce most of the nation's domestic food crops including fruits and vegetables. They also produce a significant portion of Jamaica's export crops--it is estimated that small farmers produce about one-third of all export production, including coffee, cocoa, pimento, ginger, bananas and citrus.

Small farmers are found scattered all over the island, but are mostly concentrated in the hilly regions. They tend to practice mixed cropping along with a wide variety of crops under different conditions of culture and methods. The small farmer works marginal hillside lands for the most part, using simple hand tools, and has little or no assistance in advanced agricultural technology.

The average small farmer in Jamaica has a shortage of working capital. He has only limited exposure to and makes little use of marketing information in deciding which crops to plant. He applies small quantities of fertilizer, generally does not apply chemical weed and insect controls and has difficulty obtaining labor to assist in farming operations, particularly at harvest. In a majority of cases, small farmers must independently finance seeds, fertilizers, pesticides, hand tools, labor and their subsistence between crops because credit programs, as in most developing countries, have not successfully been implemented down to the small farmer level. Many small farmers cultivate several plots that are some distance apart, making it difficult to transport inputs and to sell and transport the fruits and vegetables produced.

The above characteristics of small farmers in Jamaica are typical of small farmers in many developing countries. However, some characteristics of small farmers in Jamaica are generally different from those in some other developing countries. A large portion of small farmers in Jamaica can be considered commercially oriented from the standpoint that they plan to produce, on a small scale, products for commercial sale. That is, they are not subsistence farmers who sell commercially only that which they do not consume. However, the Jamaican farmer is cautious about abandoning traditional agricultural practices when he has been and may again be confronted with poor weather conditions, erratic prices and insufficient credit and inputs.

Incomes of Jamaican small farmers are relatively high, averaging around U.S. \$1,000, compared to incomes of small farmers in most developing countries. This situation creates a different small farmer environment--economic, social, cultural and psychological--which is not present in traditional developing countries. The small farmer is very alert to the political situation around him and is highly aware of the government's concern for small farmers and is not adverse to expressing concerns and dissatisfaction with government programs.

In summary, the small farmer production situation in Jamaica gives rise to certain constraints to increased production and income. The major constraints are:

1. Small and scattered land holdings, resulting in inefficient management of the production of fruits and vegetables.
2. Most fruit and vegetable production occurs on hillsides, resulting in land erosion which limits the productivity of the land.
3. Because of scattered locations and locations of sizable distance from the major road network, transporting production inputs to the plot and produce from the plot to market is difficult and time consuming and results in high postharvest losses.
4. Limited availability of affordable labor, particularly for harvest.
5. Shortage of working and investment capital, which limits ability to optimally utilize production inputs and adoption of new technology.
6. Limited and costly production inputs such as fertilizer, seeds, pesticides, and tools, etc.
7. Limited access to market information to guide decisions regarding what to plant and when to market.
8. Volatile prices for produce resulting from substantial seasonal gluts and shortages due primarily to a lack of planned production and (to a lesser degree for fruits and vegetables), to a lack of adequate farm storage.

Small Farmer Marketing

The agricultural marketing of products produced by the small farm sector in Jamaica is separated into two well-defined areas. One is oriented towards export crops such as coffee, cocoa, pimento, citrus and bananas. This sector is reasonably organized, and is managed by Commodity Boards in all aspects. The other is primarily domestic food-oriented, operated mainly in the private sector with support from the Ministry of Agriculture.

Marketing to most small farmers in Jamaica encompasses only exchange of ownership at the farm gate. Farmers plant those crops that brought the highest price at their last harvest. They harvest only those small quantities of produce that can be readily carried away by individual traders, commonly called "higglers." These are either farm wives who market the produce of the family farm and purchase directly from other small farmers in small lots, or

other women who act as small retailers, wholesalers and transporters. The estimated 20,000 higgler in Jamaica are the backbone of the small farmer marketing system. It is estimated that they are responsible for the distribution of about 80 percent of the domestic fruit and vegetable production. Family ties, availability of credit to finance production, provision of household supplies on the return trip (backhaul), and part time employment all strongly suggest that the higgler marketing system in Jamaica will continue.

Farm gate price is established between the farmer and the higgler. Usually the higgler offers a price, which the farmer either accepts, and the sale occurs, or rejects, and no sale is made. In many cases of no-sale the product is left unharvested and so never enters distribution channels. Often the higgler harvests the fruits or vegetables as part of the exchange function. This allows the higgler to select the produce she wants (grading) and also relieves the farmer from hiring labor or harvesting the crops. The quantity purchased by the higgler is limited to the amount of product she can carry out of the hills either on her head or in some cases with the use of a donkey. Produce is transported to the roadside to be placed on public transport for movement to the single terminal wholesale market in Kingston, only, in many cases, to be trans-shipped back across the island to be distributed to customers located there. This results in inefficient distribution and relatively high postharvest losses from additional handlings and transport.

Although accounting for a relatively small portion of the total amount of fruits and vegetables marketed in Jamaica, an additional type of market intermediary has evolved in recent years. This market intermediary is called a "super higgler," who is in fact a professional full-time wholesaler. The super higgler owns one or more trucks, purchases directly at the farm gate, at parish or district markets or at the wholesale market in Kingston. They sometimes retail these products at curbside, but more generally sell to hotels, restaurants, green grocers and institutions on a contract or job lot basis. These super higgler, as well as exporters themselves, secure produce for the export market. However, the export of fruits and vegetables, except for citrus and bananas (which are handled by Commodity Boards) as well as mangoes and yams, is minimal.

It should be mentioned here that in 1963 the Agricultural Marketing Corporation (AMC) was established by the Government of Jamaica to bring order and efficiency to the marketing system. The AMC acted as a market intermediary undertaking both retail and wholesale functions. Products were purchased from farmers through over 200 buying stations and assembled, stored, graded and packaged at eight regional branches. Central warehousing and wholesaling operations were headquartered in Kingston. AMC's major function was that of price stabilization, buying farm products at guaranteed buying prices. It also had objectives of restraining consumer prices, which it attempted through operating AMC green groceries, basic retail shops and mobile routes.

AMC was not successful and was totally discontinued in 1983. It was not able to compete with or undermine the traditional higgler system. It probably never handled more than 5 percent of the agricultural products, and generally these were the products left behind by the higgler. All types of problems plagued AMC, including insufficient operating capital, excessive waste,

pilferage, poor management, poor sites, conflicting objectives, etc. In the recent years before 1983, annual losses amounted to millions of dollars.

In summary, the small farm marketing situation in Jamaica can be described, in terms of constraints, as:

1. Small volume marketing as higglers are limited to the quantity they can handle.
2. Consumer demands are only partially reflected back to the farm level.
3. Grading is informal since official graders are not in use (some grades have been developed but are for voluntary use and have not been accepted by the traders).
4. Postharvest losses are high.
5. Transport is difficult between farms and markets, thus restricting access to markets, increasing costs and postharvest losses.
6. Public markets are inadequate and inconvenient since most are old, lack space, are unsanitary and lack storage space.
7. Only one wholesale market limits trading and facilitates considerable trans-shipment of produce and, hence, increases cost.

Government Policy

The government of Jamaica has set out basic policies for the development of the small farm sector with the following objectives:

1. The small farm sector should provide as much food and raw material as is feasible to meet the needs for an adequate food and nutritional level of the population, agri-industrial needs and the requirements for export.
2. The production of the small farm sector should be so structured as to reduce reliance on imports, with the objective of self-sufficiency where the small farm can produce best.
3. All agricultural lands will be protected from misuse and speculation so that lands are used to their fullest potential, resulting in optimum economic and social benefit.
4. The creation of employment opportunities in rural areas will be given high priority to arrest the rural to urban population movement.

In relation to the marketing of agricultural products, the government of Jamaica in its National Agricultural and Food Marketing Policy and Strategy sets forth the objective:

"To foster the development of an agricultural and food marketing system in Jamaica capable of efficiently distributing required factor inputs to producers, capable of stimulating an expansion of production of the type, volume and quality of commodities demanded, and capable of distributing the

products of agriculture from the producers to the final consumers in a manner that will achieve the greatest economic and social benefit."

Market Intervention

The major market intervention attempted by the government of Jamaica is comprised of a number of components. As a stated policy, these components were to be initiated in such a manner that the existing marketing system (the higgler system) was not to be replaced. Unfortunately, the existing system and the reasons for the existence of the system were not understood, and eventually it was recognized that many of the interventions actually would, in fact, replace the existing system.

The basic strategy of the market intervention recognized the need for:

1. An institution to be a catalyst to bring about change and assist in upgrading the marketing system,
2. Adequate facilities to permit the assembly, concentration and distribution of fruits and vegetables,
3. Producer organizations to give farmers a vehicle for performing more of the marketing functions, and
4. Upgrading of the Kingston wholesale/retail distribution network.

Four market interventions were specifically designed as part of a major Agricultural Marketing Development Project initiated by the Government of Jamaica and USAID.

1. The establishment of a Marketing and Credit Division within the Ministry of Agriculture to undertake marketing development, marketing extension, marketing research, market news and information and quality assurance activities. This Division was established and personnel trained to carry out the various functions of the Division. Although not totally effective, due primarily to low government salaries, lack of operating capital and low levels of motivation, the existence of the Division has brought marketing into the decision-making process of the government. It has initiated a relatively good market news collection function and is improving the dissemination process. The marketing extension program has been effective in bringing buyers and sellers together and in providing a minimal level of marketing education to producers. The marketing research group concentrated efforts on conducting feasibility studies for assembly and grading stations but little else. Market development work was never initiated. Grades were developed for most fruits and vegetables, but since quality grading for domestic production was voluntary and since there appeared to be a relatively well established informal grading system, these grades were never enacted.
2. The construction of 25 assembly and grading stations located throughout the country in major fruit and vegetable production areas. The stations were to be fully equipped and were to be operated by producer groups organized into Producer Marketing Associations (PMA's). A number of

problems soon surfaced including:

- a. Producers did not understand this type of marketing nor how their ownership of an Assembly and Grading station would improve their situation.
- b. The level of technology proposed for the stations was of "cadillac" quality when "model T" was all that was required, and because of this the stations would never pay off.
- c. Not all producer groups wanted an assembly and grading station since in their minds these would directly compete with the higgler system which employed many of their wives.

Eventually, the number of proposed assembly and grading stations were reduced by more than one-half due to lack of interest and lack of government funds for construction.¹

3. The construction of four subterminal wholesale distribution markets located throughout the island in order to facilitate more orderly marketing and greatly reduce trans-shipment of fruits and vegetables. Eventual investigation of potential volume flows revealed that only one of these subterminals might be feasible.

SRI LANKA

A number of circumstances have developed in Sri Lanka over the recent past that have affected the marketing system for fruits and vegetables. Among the more important of these circumstances are:

1. Government policies since 1977 have, to a large extent, removed trade restrictions and allowed the private sector an opportunity to play an increased role in marketing agricultural products both domestically and internationally. Economic policies of the Sri Lankan government since 1977 have been characterized by a series of initiatives designed to liberalize international trade policies, providing greater freedom to import and export many agricultural commodities. Beginning in 1977, state sector trade monopolies for the import and export of most food products were eliminated and the licensing of foreign trade was confined to a minimum. Internal policies have been directed towards the encouragement of investment by the private sector in many areas of economic activity. This has been especially so for agricultural development and in the increased production of agricultural crops, particularly rice.

¹ It should be pointed out that the economic climate in Jamaica changed considerably following the initiation of this project. Of particular importance was the almost complete loss of the bauxite industry, which provided the major source of export earnings. Thus, financial obligations of the government of Jamaica to this marketing project could not be met so progress of the project slowed almost to a standstill. This might have been a blessing in disguise which saved the government considerable sums of money.

2. The importance of agriculture, the heavy investments in the preceding decade and declining government revenues from exports from this sector prompted the government in 1984, to define a National Agriculture, Food and Nutrition Strategy (NAFNS). The objectives enunciated by the government were:

- a) Achievement of self-sufficiency in basic foods -- rice, milk, sugar, fish and pulses.
- b) Expansion of export capacity to increase the contribution of agriculture to the balance of payments.
- c) Enhancement of incomes and creation of new employment opportunities in the rural sector.
- d) Improvement of the nutritional status of the people.

In general, these circumstances have led government attempts to maximize the production of the basic food items to achieve self-sufficiency. Basically, efforts were made to optimize the production of subsidiary field crops (soybeans, potatoes, chilies, onions, maize, cowpeas, cassava, green gram, groundnut, finger millet, and sesame) and vegetables that have export or import substitution potential.

Major effort was placed on increasing rice production. Policies were initiated which did not tax rice directly, allowed prices to rise to world market levels, subsidized inputs, and provided substantial research and extension assistance to rice production. In addition, new lands were brought into production through various development schemes, particularly the Mahaweli Project.

The Mahaweli Project has the potential for irrigation of about 250,000 hectares of new land and to bring supplemental irrigation to about 65,000 hectares of existing land. This project has been devoted primarily to paddy production and increasing hydroelectric capacity. Considerable resources have been devoted to this project over the past four or five years (over 50 percent of total public capital expenditure was accounted for by Mahaweli related capital expenditures each year during the 1982-84 period). The result of these expenditures has brought Sri Lanka very near to self-sufficiency in rice. However, declining public investment in many areas slowed the development of other types of agriculture, namely subsidiary food crops (SFC's) and vegetables. In fact, public expenditures were reduced in such areas as rural roads (badly needed to enhance marketing) and operational expenses for research and extension departments (critically needed to improve yields and marketing of SFC's and vegetables).

Now that self-sufficiency is near in the production of rice, and considering that the rice produced in Sri Lanka has no prospect for export, lands being brought into production must be diversified. Vegetables, along with the SFC's, have been identified as crops suitable and desirable for this diversification effort. The problem is that since almost all resources have been devoted to rice production, little research is available for improving yields of vegetables, and marketing assistance is non-existent. This, then, is the current situation with regard to the vegetable production/marketing

system in Sri Lanka.

Small Farmer Production

About four million acres are under cultivation in Sri Lanka. About one-half of this average is devoted to estate crops (tea, rubber and coconut), 45 percent to paddy production and the remainder to the production of other crops, including fruits and vegetables. Fruits, with the exception of banana, pineapple and passion fruit which are exported, are primarily produced as backyard or home garden ventures, with commercial production almost non-existent. Vegetables are currently produced on between 100,000 and 150,000 acres, with about 70 percent of this acreage in landholdings of less than one hectare. Consequently, a majority of the fruit and vegetable production occurs on landholdings of a size which limits family income and employment in rural areas.

Production of most vegetables is seasonal, being determined by the bi-modal rainfall. The Maha rainy season runs from November to January when the entire country has rain carried by the North-East monsoon, and by the Yala season from May to September which brings rains to the South-West quarter of the Island. Dependence on rain is being modified by increasing investment in irrigation schemes, particularly the Mahaweli Project, which allows diversification of production and double cropping. This seasonality of production, along with the irrigation schemes, results in almost a year round production potential for vegetables.

However, due to the lack of research and technical advice capabilities that could enhance yields, vegetable production currently is limited. Further, because of low yields, higher returns to alternative crops and the practice of producing paddy as a priority crop for subsistence, vegetable production is sporadic and considered a secondary crop in production schemes of the small farmers.

In addition, the current situation relating to small farmer production of vegetables gives rise to the following constraints to increased production:

1. Small farmers are located across the island. Many of them are in relatively isolated areas a considerable distance from improved roads, making the securing of inputs and marketing of their vegetables costly and time consuming.
2. Since most vegetable producers have very small acreage and because of isolation, the access to traders is extremely limited. In some cases, traders do not visit the plot, so there is no buyer.
3. The vegetable farmer has few sources of information for improving cultural practices, methods of handling and harvesting vegetables, and how to market their produce.
4. The availability of inputs to the production process is very limited. Seed for vegetable crops, when available, is of poor quality.
5. The production credit situation is very poor. Banks advance credit reluctantly and usually only when government policy forces them because

default rates are extremely high. Farmers actually prefer private sources of credit (neighbors, friends, family and market traders) because (a) private sources are more convenient, (b) procedures for obtaining bank loans are difficult and time consuming, and (c) there is fear of legal consequences from the bank in the event of crop failure.

6. Prices are volatile as a result of gluts and surpluses, lack of market access, and various government import policies which have frequently had the effect of significantly lowering farm prices. In fact, cost of production budgets for many vegetables indicate a negative return to the farmer.

Small Farmer Marketing

A vegetable producer in Sri Lanka can sell his produce through a number of different marketing channels and methods. Further, not all farmers, or for that matter, not all market intermediaries, choose to use only one channel or method. The result is a very complex marketing system. Figure 1 is a diagram which attempts to show this complex system.

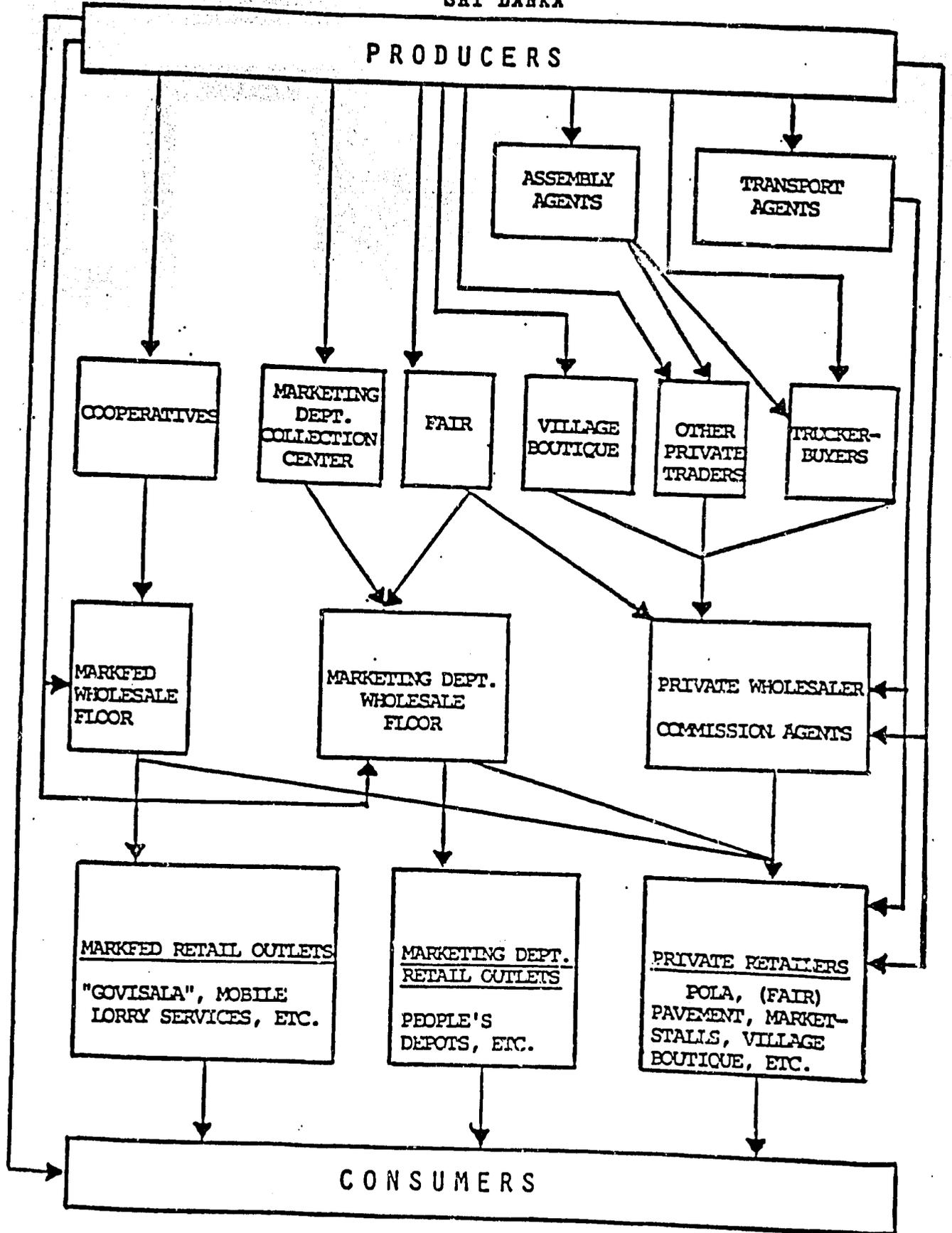
In its simplest form, producers either sell to a trader (assembly agents, trucker buyers, wholesaler), to a village market, (fair, boutique, market stalls) or to a government agency (Marketing Department, or Markfed, the Sri Lanka Cooperative Federation LTD). From this point forward, sales may be made to other traders, wholesalers, retailers, consumers, or government agencies. The following is a brief discussion of the various entities involved in the vegetable marketing system.

Traders: Traders may be (1) independent buyers who go to farms to purchase vegetables, or they may purchase from village boutiques or fairs for resale to wholesalers and in some cases retailers; (2) assembly agents or trucker buyers who are essentially under contract with wholesalers located in the central wholesale market in Colombo to purchase vegetables and deliver them to the wholesaler (the agent is told the price to offer and pays the farmer on the return trip); or (3) wholesalers in the local area who purchase from the farmer and sells to retailers at local village markets.

As in most developing countries (but perhaps more so in Sri Lanka), the trader is viewed as an unscrupulous exploiter of both the farmer and the consumer. There are complaints that many farmers are visited by only one trader, and the farmers are at the mercy of a collusion amongst traders. However, it can be shown that the infrequent visits by traders are a result of insufficient surpluses at the farm level which does not attract a queue of traders wishing to deal directly with these farmers. Nevertheless, neither the Sri Lankan government nor donor agencies recognize the private trader's importance as a useful and essential market participant. In addition to disposing of the farmer's produce, the trader, in many cases, provides timely cash and credit for input supplies. Rather, examples are given of traders offering lower prices at the farm gate than offered in the village or at a nearby government agency. Obviously a lower price would be offered since the farmer is willing to accept a lower price and not have to spend the time and expense to transport the product to the market, or take the risk of product damage during transit.

FIGURE 1

FLOW DIAGRAM OF THE VEGETABLE MARKETING SYSTEM
SRI LANKA



Source: Factors Influencing Vegetable Prices: A Study of the Vegetable Economy in Sri Lanka, Research Study No. 35, ARTI, February, 1980.

The result of the negative attitude toward traders is that this very useful and important resource (the trader) has generally been ignored in development planning efforts in Sri Lanka.

Wholesalers: In Sri Lanka, the hub of the marketing system for vegetables is the Pettah market located in Colombo. In addition to housing wholesalers for rice and subsidiary food crops, this central wholesale market houses some 800 commission agents/wholesalers specializing in vegetables plus about 200 who both wholesale and retail. The trading atmosphere at Pettah appears to be very competitive, in that all wholesalers have free access to the same end users and the number of wholesalers is large enough to eliminate the formation of cartels.

Most transactions at the wholesale level take place on a commission basis, i.e., vegetables are sent to the market by farmers or local traders who pay transport and handling charges, then the wholesaler sells the product on commission.

In the provincial towns, wholesalers operate to supply their immediate area direct from the production area rather than via the central wholesale market in Colombo. This reduces marketing costs and inter-regional disparities in prices.

Government Agencies: Two separate government agencies are directly involved in the marketing of vegetables.

Markfed buys vegetables through its own collection agent network, which consists of almost 300 multipurpose cooperative societies with 1500 branches. Markfed currently buys about 1 percent of the vegetable production, and this percentage has been declining over the past few years. It has six retail stores in Colombo and one in Kandy through which it sells the vegetables. The vegetables are very poor quality and ill-presented in these stores. In reality, as a trading entity in vegetables, Markfed's role appears to have little justification.

Marketing Department operates about 200 retail outlets, 17 purchasing centers and 3 wholesale booths. This agency claims to handle about 8-10 percent of the Colombo vegetable trade, but outside Colombo an insignificant amount. It does have contracts to supply institutions such as hospitals. At the present time, the government treasury has stated that it will no longer cover all department costs which has placed the Marketing Department in jeopardy since only about 65 percent of staff costs are covered by the operation.

Overall, it is estimated that the combined share of the national vegetable trade held by Markfed and the Marketing Department is about 2 percent. It appears that neither entity is economically justified in the vegetable industry.

An overview of the vegetable marketing system in Sri Lanka reveals the following major problems which tend to reduce, and in some cases inhibit, the efficiency and effectiveness of the overall marketing system:

1. The majority of farms other than estates are of less than one hectare in extent, and of this area the major part is devoted to rice; thus vegetable production is practiced on a very small scale. Small volumes from a large number of widely dispersed individuals makes market rationalization extremely difficult.
2. Research and extension staff and programs are almost wholly devoted to production increase, and this principally for rice. There is no forum for redirecting resources, human and financial, into a market oriented program which considers diversification of cropping either at national policy or execution level. Such initiatives as have been taken to introduce market orientation have been taken at project level rather than national level, thus accentuating the very fragmented agricultural policy and support structure of Sri Lanka.
3. Financial institutions worldwide are generally reluctant to fund the small farmer. In agricultural marketing in Sri Lanka, this reluctance is fueled by a lack of guidance on the benefit which can accrue to the farmer or trader from improved marketing practices. Cash flow problems force short-run sales, which can further exacerbate a depressed market.
4. The technologies of vegetable harvesting, handling, packaging and transport are currently receiving no research attention. High wastage figures are reported, the cost effective avoidance of which would reduce marketing margins.
5. There is no evidence of recognition in the Department of Agriculture that assistance to the private trader would in fact benefit the farmer. The extension service, being at farm level, should be aware of the problems which the farmer faces in marketing his goods and should be helping to make all channels freely open to him. The Marketing Division of the Mahaweli Economic Agency has recognized this and has forty-three marketing extension officers identifying trading opportunities and helping traders and farmers to interact. The Department of Agriculture, on the other hand, confines itself to encouraging cooperatives and other state organizations and does not even circulate farm-gate prices to traders. In the Department of Agriculture there is no evidence of any appreciation of the service which the private trader renders the farmer. The private trader markets the overwhelming proportion of vegetable production. Hence, if a serious attempt is to be made to create a more efficient and effective marketing system, it is obvious that the Department of Agriculture should concentrate its efforts on improving the performance of the private trader sector.
6. Inadequate and inconvenient market premises add to costs and increase health risks. The Colombo Pettah Market is probably at a point where its social costs outweigh the benefits.
7. Agro-industries are a potential means of developing orderly marketing. This growth is hampered by such factors as a restrictive land policy which inhibits economies of scale, a lack of technology development research, and high import duties on certain input items.
8. Policy formulation is founded on data whose basis is weak and whose

variation from different agencies is frequently irreconcilable. The analysis of the data is often inadequate. The number of bodies formulating policy on this basis results in contradictory signals to the farmer and the trade.

9. Grading schemes for vegetables have received virtually no support from the ministries concerned with agriculture. Standards have been developed and promulgated for some products for export. For selected products, standard grades could be introduced for use in domestic marketing with the aim of improving efficiency.
10. Given the decrease in the volume of trade done by the various public institutions, i.e., Marketing Department and Markfed, per unit costs are rising steeply. Several government institution retail outlets can be seen located side-by-side, all offering an overlapping limited range of products. There can be no justification for continued public funding of all these agencies as trading entities--except as an employment creation scheme.
11. In general, expertise in marketing, particularly in the Ministry of Agricultural Development and Research, is non-existent. Therefore, the ability to initiate corrective marketing research and extension programs is very limited and not adequate to facilitate support services for the development of effective and efficient marketing of vegetables.

Government Policy:

Agricultural development policy formulation and implementation in Sri Lanka can be described as being generally on an ad-hoc basis, crop oriented and with individual policies unrelated to each other. This situation, however, is not uncommon in other countries, developing and developed. There are a number of reasons why this situation exists in Sri Lanka, including: (1) lack of adequate information and/or analysis of available information to allow evaluation of the potential impact from alternative courses of action; and (2) lack of recognition of the interrelationships that exist between different policies, some of which may on the surface, appear to be independent of each other. This is particularly true in the case of national economic policies such as currency devaluation effects on agriculture, or policies designed to restrict imports of non-agricultural commodities and their impact on potential exports of agricultural products.

Sri Lanka has numerous examples of conflicting policies which have resulted in additional problems. For example, the policy of limiting landholding size in the Mahaweli Program to one hectare places extreme difficulty on attempting to achieve an efficient marketing system for vegetables produced on these holdings. This is particularly so because emphasis has been placed upon the use of the land primarily for rice production with the remaining space for alternate crops. The result is that very small quantities of vegetables are produced on each individual landholding, creating a situation where the marketable surplus is insufficient to attract competing traders. Thus, the farmer must either sell to a lone trader at a price low enough to cover the trader's increased cost of collecting because of small volume, or incur the cost of taking his small volume to the weekly "pola" or to a government buying agency, which is often further away than the local pola and which accepts

graded produce only.

Policies in Sri Lanka formulated and implemented to assist producers in marketing their products have centered on price policy and the government's intervention as a trader in the marketing system at the farm level to maintain prices at or above specified levels to the farmer, and at the retail level to maintain low price levels to the consumer. The objectives of these actions are to increase farm incomes and the standard of living in rural communities and to protect consumers against high price levels. To complement this program, imports of designated commodities (onions, potatoes, etc.) have been regulated from time to time, restricted to maintain or increase farm level prices, or permitted to keep consumer prices from increasing excessively as a result of production shortfalls.

The major price policy implemented in Sri Lanka is a "Floor Price Scheme" which does not include vegetables. However, price supports for alternative crops will affect the decision to produce vegetables; i.e., if the support price for commodities included in the scheme is relatively high in comparison to anticipated prices for vegetables, the farmer will plant the commodity under the scheme since the support price is announced in advance of the sowing season.

The government's intervention as a trader in the system includes handling vegetables as a commodity. But only about two percent of the vegetable production is marketed through government facilities, and in general these vegetables are in very poor condition--indicating that the government receives vegetables rejected by the private trader system.

A number of other schemes directly or indirectly affect orderly marketing of fruits and vegetables, such as planting subsidies (currently in use to promote increased fruit production), fertilizer subsidies, agricultural credit schemes, etc. A serious problem exists, however, in that these various schemes are not always implemented in a fully coordinated plan for increasing production of those crops which will yield the highest returns to the use of resources available to the farmer. Further, essentially no consideration is given to available markets, consumer demands, etc.; rather, it is assumed that the government will purchase what is produced.

In short, government policies are uncoordinated, many times developed by different ministries, and they are designed to increase production with no consideration given to where the production will be marketed or to ensuring that an infrastructure is in place to market these products.

Market Intervention

Interventions in the marketing of fruits and vegetables in Sri Lanka have essentially been limited to direct trading by the government. This reflects government policy prior to 1977; i.e., the State assumes the responsibility of performing the function. Little recognition is given to the fact that the private sector perhaps could adequately perform the function of marketing if provided some support by the government.

Recently, however, it has been recognized that the private sector has essentially taken over the function of marketing fruits and vegetables despite

efforts of the government to be a state trader. Further, new demands have been placed on the marketing sector to dispose of potential increases in fruits and vegetables resulting from large amounts of new lands coming into production and from government concern that this land be sown to crops other than rice, preferably vegetables and subsidiary food crops.

Thus, the government's concern now centers on the role it can play to assist in further developing the private sector with the objective of improving, and in some cases, developing a marketing system for fruits and vegetables.

As a result of these concerns, a recent study of the situation resulted in the following proposed interventions:

1. Initiate and staff a research program in agricultural marketing and postharvest technology. This program should have the following characteristics:
 - a) Include elements of both basic and applied research, but with major emphasis on applied research, incorporating results of basic research already conducted from other Asian countries (i.e., conduct adaptive research).
 - b) Marketing research should be designed to provide information to three major groups of clientele: 1) national policy makers - to assist them in making more informed decisions regarding choice between policy alternatives. At present, little if any information is developed regarding the impact of various policy alternatives on the fruit and vegetable production/marketing system, or for that matter, on any other segment of the agricultural industry in Sri Lanka; 2) market intermediaries - to assist them in developing a more efficient and effective marketing system for fruits and vegetables; and 3) farmers - to assist them in making more market-oriented production decisions and to make more informed decisions regarding alternative methods of marketing their produce.
 - c) Provision must be made to assure that research results are adequately disseminated to potential users and that needs for research be made known to the research unit.
 - d) The private sector must be incorporated into the planning process for research programs. At present, the private sector is neither involved with the agricultural research planning process, nor does it receive research results. Research is currently conducted by the government (Rice Processing Research and Development Centre, Paddy Marketing Board, the Agriarian Research and Training Institute, etc.), and essentially is disseminated to other governmental agencies only.
 - e) Provision must be made for either placing all research efforts under one administrative body, or for coordinating the research activities of the 15 separate research institutes and departments functioning under 7 ministries and the Office of the President. The current structure results, in some cases, in duplication of effort. In other cases, significant voids exist. At present, marketing research is

not conducted by any agency, and postharvest research is conducted for only basic crops, primarily rice. Further, market oriented production research is non-existent. These problems must be corrected, and it appears that they can be corrected only under conditions that provide directed leadership.

2. Initiate an extension program in agricultural marketing and postharvest technology. This program should have the following characteristics:
 - a) The extension orientation must be to not only disseminate information, but also to assist potential users of the information to adopt this information in the form of actual incorporation into their operating situation. This will require personnel training in marketing and postharvest technology. It is not proposed, however, to initiate a new division of government, staffed with additional personnel. Rather, existing, selected personnel should be utilized by providing training and backup assistance formally trained specialists (which would be new personnel since none presently exist).
 - b) Educational efforts must be oriented to two distinct groups. Farmers need to know when, where and how to market fruits and vegetables as well as how to make production decisions that will result in a marketable product. Market intermediaries must learn how to use market information and determine costs. They must also be educated about the benefits of alternative methods of marketing and handling, packaging, transporting, etc. of produce, and in evaluating supply and demand conditions to optimize returns.
 - c) A critical component of initiating a program of assisting farmers and market intermediaries is to convince leadership of the need for such a program. Therefore, efforts need to be made to educate administrative personnel as to the importance of marketing fruits and vegetables in an efficient and effective manner in order to give production oriented development programs a chance of success.
3. Significantly improve the market/production, information collection and dissemination process. This proposed intervention would have the following characteristics:
 - a) Collection, analysis and dissemination of production statistics must be centralized and procedures initiated to provide more reliable information. At present, production information (acreage, production, yields, etc.) and market information (prices, product movements, etc.) is collected by and provided by a variety of governmental agencies. In most cases, primarily due to collection methods and procedures, the information released varies tremendously from agency to agency. As a result, policy development agencies, farmers and market intermediaries are forced to make decisions based upon totally unreliable information. Decisions made by one policy agency are often in direct conflict with decisions made by another simply because the data bases upon which the decisions were made are very much different.

- b) Efforts must be made to disseminate production/market information to the potential users of this information--particularly in a form usable by the end-user. At present, information is only published in English (primarily because most information is only disseminated to other governmental agencies) whereas farmers and most market intermediaries do not understand English. To be effective, this information must be provided in the native language. Ways must be determined to provide this information directly to farmers and market intermediaries.

CHAPTER V

CONCLUSIONS

Critical Factors Affecting Marketing System Interventions

Certain critical factors affect the evolution or transformation of fruit and vegetable marketing systems in developing third world countries. These factors take on differing levels of importance from country to country due to tradition, social conditions, resource availability, attitudes, perceived role of the public vs. the private sector, etc., as well as the specific commodities handled. It is possible to draw generalized conclusions regarding these factors and their effect on the design of market interventions and the potential for the success of these interventions in improving marketing systems.

1. Analysis of Existing System: In many cases, the initial analysis of the existing marketing system, its performance, its conduct and its problems, particularly economic, social and technological aspects, is not conducted at a depth which reveals the many interacting elements which, in fact, drive the existing system. Thus, the recommended market interventions may not be adequate and at times may be totally inappropriate. This situation can be corrected, however, if there is adequate flexibility to alter the proposed courses of action during the progress of the project. Unfortunately, many development projects are not flexible, and, in fact, performance of the project is measured only on the basis of achieving the stated objectives and carrying out the specifically defined activities.
2. Transfer of Technology: It is not always appropriate to attempt to transfer technology from a developed country into a marketing system of a developing country. Generally the technology is far too expensive to expect repayment at price levels received in developing countries. In most cases, consumers may not demand the types of output from this technology (packaging, grading, etc.), nor will they be able to pay for these activities and services. Further, high unemployment and relatively low wage rates in most developing countries require a thorough evaluation in relation to displacement by expensive, imported capital.
3. Existing Marketing System: In all cases, the existing marketing system must be considered in the design of development programs and every effort must be made to incorporate it into the proposed system. Otherwise, chances of success will be very low. Traditional ways of doing things are difficult to change and will take time. A new system simply cannot replace an existing program until everyone involved is firmly convinced that the new system is "better" and will directly benefit them.
4. Marketing Margins: The identification of "high" marketing margins for fruits and vegetables must not necessarily be considered as a condemnation of the marketing system. Considerable postharvest loss potential due to high perishability, plus additional costs incurred for improved packaging, transport, etc. to reduce postharvest loss, tend to result in higher margins than other less perishable agricultural products. Poor roads, lack of adequate transport vehicles, potential equipment failures, time consuming transport distances, high cost credit, etc. result in costs that

are inherent to developing countries and will increase marketing margins.

5. Quality Assurance: In most developing countries, the informal grading of fruits and vegetables appears to be adequate for the domestic market. However, if consideration is being given to entering the export market, a more formal, standardized quality assurance program is required. It is extremely important to structure into the grading system the quality characteristics of the countries to which the produce will be exported. Usually, preferred quality in the exporting country is different than in the country to which exports will be sent. Producers have been producing for domestic requirement and will very likely have to change cultural practices to provide the produce desired for export. Thus, considerable effort must be made to convey export quality standards to producers and to provide assistance, and perhaps incentives, to producers to achieve production of the quality desired.
6. Processing: Processing of fruits and vegetables is often proposed as an intervention designed to reduce gluts and provide a market for additional production. Many of these ventures have failed due to such factors as inability of processors to obtain adequate reliable supplies of raw products; inadequate market analysis for products produced; and inadequate consideration of seasonality of fruit and vegetable production, particularly in tropical areas, where these items are generally available in fresh form on a year-round basis.
7. Export: Many export programs have been unsuccessful for fruits and vegetables because of the problems resulting from attempts to secure the production for exports from small farmers, widely dispersed throughout the country. Assembly, quality control and reliability of supply are factors difficult to control in most developing countries. It appears that, if export of fruits and vegetables is to be developed, the production process must be centralized and at a scale that will allow efficient production, assembly, grading and transport. This is contrary to the objective of most developing countries to achieve their production goals through small farmers. The "mother farm" concept has been proposed as an alternative to large scale production enterprises. This may be a viable alternative, if the mother farm implements a program to teach appropriate technology to small farmers and if both the small farmers and the mother farm live up to their obligations.
8. Public Marketing Agencies: In general, the performance of public marketing agencies, i.e. marketing boards and other types of government marketing entities, has been poor, particularly in handling products for the domestic market. Government agencies in developing countries are generally inadequate to deal effectively with fruit and vegetable marketing because of the complexity involved and dynamic nature of the marketing requirements. Government agencies have been hampered by extremely high overhead costs, lack of marketing expertise, and particularly a lack of incentive to achieve efficiency, especially when losses are covered by the treasury. Thus, replacing private traders with governmental agencies does not appear to be a viable intervention in most cases. At the very least, any country considering this type of intervention should investigate experiences of other countries, and consider these experiences in their final decision.

9. Postharvest Losses: Considerable postharvest losses are incurred during the marketing of fruits and vegetables, particularly in developing countries. Reduction of these losses will result in an increase in available food supplies, which, from a humanitarian standpoint, is desirable. Thus, in many countries the conclusion is that these losses must be reduced. However, experience has shown that, even though technology can reduce losses, the private sector will only adopt it if the economic benefits from the reduction in loss are greater than the cost of using the technology. In order to evaluate the cost/benefit ratio, the magnitude of the loss and the specific cause of the loss must be identified which is seldom, if ever, done before the loss technology is introduced. For those cases where the benefits do not exceed the costs, and unless the public sector is willing to subsidize the adoption of technology for purposes of increasing food supplies, adoption by the private sector has not materialized, even though, in many cases, considerable funds have been spent to make the technology available.
10. Production/Marketing Systems: Most developing countries place major emphasis upon allocation of resources to assist in improving the agricultural production sector, with few, if any, resources devoted to improving the agricultural marketing sector. In fact, in most developing countries, it is assumed that a clear dichotomy exists between these two sectors. In these cases, development of an effective marketing system has either been impossible or has taken an extremely long period of time and resulted in considerable frustration during the development process. It is critical to the success of development efforts directed toward marketing systems, and, in fact, toward the development of production systems, that the production and marketing of any agricultural product be considered as one system. This system must be developed as a joint, fully coordinated production/marketing system in all aspects.
11. Coordination of Government Policies: In most developing countries, there is a multiplicity of government agencies involved in the development and implementation of policies which directly and indirectly affect agricultural production and marketing. It is commonly the situation that there is little, if any, coordination of policy development activities of these agencies, and there is little evidence that policies are directed toward any overall national objectives. This situation results in numerous conflicts, uncertainties and confusion. Successful policies are those that are introduced in a coordinated and timely manner after full consideration of the potential impact on the immediate problem and on the other sectors of the economy. This is best achieved by centering policy decision making authority in one entity. This, however, is not always possible, so the second best approach is to implement a coordinating committee comprised of the individuals with decision-making responsibility and authority.
12. Formation of Farmer Associations: In most developing countries the need exists to bring together the production of fruits and vegetables from a relatively large number of small producers widely scattered around the countryside. Further, there is a need to assemble these products into a volume large enough for efficient transport to market. The produce needs to be properly graded and packaged to achieve uniformity, postharvest loss reduction, and quality control. Due to the emphasis in many of these

developing countries on improving the situation of the small farmer, it is often recommended that farmer associations be formed to perform the various marketing functions required. Any profits received from the performance of these functions would be returned to the farmer members of the association, thus enhancing their economic situation. When the decision is made, generally by a government body, to form farmer associations, considerable effort is usually expended to educate members and potential members in areas such as: cooperative principles, board of director duties and responsibilities, board/manager relations, principles of management, etc. Generally, little if any education is provided to farmer members concerning the marketing venture in which they are becoming involved. These members normally know very little about the marketing process beyond the farm gate. If members are to fully support their association, they must be made aware of the importance of all of the functions to be performed by the members, individually and collectively, and by the association so that their produce is efficiently and effectively moved from the farm to the consumer. Commitment by members is critical to the success of any collective action taken by the association -- knowledge of the why, what, where and when of this collective marketing activity is a prerequisite to this commitment.

Priority Market Interventions

In general, market interventions designed to assist in the development of efficient and effective marketing systems for fruits and vegetables have been most successful when directed at the provision of support services. Two of the commonly suggested support services, provision of market information and intelligence and timely credit are basic to and a prerequisite for successful progress toward improved market performance in the fruit and vegetable industry of developing countries. It is, thus, critical to implement these support services as the first step in the development of market interventions. There is considerable evidence that if this is not a first step, other market interventions will be very difficult to successfully implement.

1. Provision of Market Information and Intelligence:

The provision of market information and intelligence to the participants of the fruit and vegetable production/marketing system, and to the makers of policies which affect this system, is an absolutely critical prerequisite to any attempt to impact the performance of the system. Policies designed to assist in the development of an efficient and effective production/marketing system must be based upon adequate, accurate and timely information with sound analysis and interpretation. Effective decisions on the part of the participants of the production/marketing system (producers, market intermediaries and consumers) must also be based upon sound analysis of adequate, accurate and timely information.

Such a system of market information and intelligence must have the following characteristics:

- a. The information must be collected, assembled and analyzed such that the resulting intelligence meets the needs of the end-user. This

requires input from the users in the design of the system.

- b. The information collected must be inclusive of the various factors that affect the market situation. These factors would include, in addition to prices at all levels of the production/marketing system, price variations due to quality differences, available and projected supplies, market location, services provided, etc. This requires a determination of the important factors affecting price and then a planned, organized procedure for securing this information.
- c. Data collection must produce accurate and reliable information. This requires identification of appropriate sources of data and the use of appropriate sampling methodology to ensure representative data are secured.
- d. Analysis and interpretation of the market information collected must either be provided to the users of the information, or the users must have the ability to analyze the data themselves. This requires either the establishment of an entity to perform the analysis function or the implementation of a program to provide analysis training to potential users of the information.
- e. The information and/or intelligence generated must be disseminated to the end-users in a timely manner and in a form that can be understood by the user. This requires the determination of the most appropriate channels of communication as well as determination of the most appropriate format, style, content, language, etc. so that the information disseminated is useful.

2. Provision of Marketing Credit:

As the need for improvement in the performance of a fruit and vegetable marketing system becomes evident it should also be evident that to facilitate needed improvements will require access to adequate credit to finance them. Traditionally, however, credit schemes have been made available for production oriented ventures but seldom to marketing activities. A major reason for the lack of credit schemes for marketing involves the negative perception of the market intermediary and a lack of understanding of the role of marketing in general. Often, it is difficult to evaluate the likely returns from investment in a new technology designed to, for example, reduce postharvest loss during the marketing process. On the other hand, it is relatively easy to evaluate the potential returns from the investment in fertilizer to increase yields. Another problem of making credit available to private traders is the lack of collateral. Whereas farmers, even small ones, generally have some land that can be used as collateral, private traders do not. Thus, banking institutions have generally been reluctant to offer credit to marketing ventures, particularly those undertaken by private traders.

Furthermore, since it is difficult to evaluate the benefits from the adoption of new marketing methods and technology, potential users (private traders) are reluctant to secure credit and incur a debt that involves uncertainty in ability to repay.

The solution to this situation involves:

- a. Evaluation of the cost/benefit situation in regard to the implementation of marketing methods and technology.
- b. Education of market intermediaries and financial institutions of not only the cost/benefit situation, but also the role and functions of the marketing system in the overall agricultural development process, including potential impacts from improvements in marketing on the society of the nation.

Critical Needs for Research

Although there are numerous areas which have need for research, this report will limit its comments to two of the top priority areas of need:

1. Numerous studies of agricultural marketing have been conducted in developing countries. In total, significant contributions have been made in describing how markets and marketing systems work, in delineating problems which affect the efficiency of the system, and in identifying potential interventions designed to improve markets and marketing systems. Studies have also been made of the effect of social relationships on the organization and conduct of marketing systems. Somehow, however, sociological oriented research has not, generally, been integrated with marketing research. As a consequence, market interventions, initiated upon the recommendations from agricultural marketing studies, have not in many cases achieved or resulted in the expected change in the system. The reason usually can be traced to the lack of consideration of social relationships, social attitudes and social habits and traditions as they affect the way participants of the marketing system react to change.

There is a definite need to initiate research for evaluating interrelationships between the economic, marketing and social factors which influence the performance of fruit and vegetable production/marketing systems in developing countries. This research should result in recommendations as to how proposed interventions can incorporate marketing, economic and social factors such that actual results from the intervention approximate expected results.

2. A second area of research need involves an investigation of the role, and the problems associated with this role, of various types of incentives to bring about change in marketing systems. In some cases, direct market interventions, such as assembly and grading stations, have been initiated through the use of non-price incentives. That is, it was felt that current price levels would not suffice to enable the initiator of the intervention to recapture the investment in, and/or the operational costs of the intervention so subsidies, grants, etc, were utilized as a means of introducing the intervention into the system. Over the long run it was found that the service provided by the intervention could not be justified in terms of consumers' willingness and/or ability to pay for this service. Thus, continued subsidy was required or the intervention was terminated.

There is a need to determine those factors which affect the potential success of market interventions and how these factors are influenced by

different forms of incentives.

Comments on "Rapid Reconnaissance Guidelines for Agricultural Marketing and Food Systems Research in Developing Countries"

There is no question that a more structured procedure needs to be developed to guide short term research efforts designed to gain insight to the organization, operation and performance of food systems and to identify system constraints and opportunities. In the past, many of these short term research efforts have failed to identify all factors, and in some cases the major factors, that affect the current performance of the system. As a consequence, many projects, activities and actions developed and implemented (based on the conclusions reached by the short term research effort) have had limited success in improving the efficiency and effectiveness of the marketing system. Yet, increasing cost of conducting studies has severely limited the conduct of long term studies that allow time for adequate identification processes. Thus, it is most desirable to design a procedure which will make it highly probable that all major factors affecting the performance of the marketing system, as well as the major constraints and opportunities of the system, will be identified as quickly as possible. The following are recommendations regarding the proposed "Rapid Reconnaissance Guidelines for Agricultural Marketing and Food Systems Research in Developing Countries" by John Holtzman:

1. First and foremost, rapid reconnaissance techniques as proposed in the paper must, as the paper points out, be used "as a tool for learning more about commodity marketing or other aspects of the food system through observation and analysis, for identifying system constraints and opportunities, and for identifying promising applied research." Further, "it should not serve as a basis for generating definitive policy prescriptions." Secondly, again as pointed out in the paper, "recommended interventions emerging from rapid assessments, particularly improved technologies, marketing institutions, and management methods, should be tested as pilot projects and regarded as experiments." If these points are accepted and adhered to, the use of rapid reconnaissance techniques will result in a significant contribution to the process of improving agricultural marketing systems.
2. Restricting the focus of the rapid reconnaissance to one or two related commodities in a subsystem context, or to a specific segment of a market, or to a specific function performed in the marketing system, and/or to a specific geographical region, is essential to this approach. Conducting rapid reconnaissance of an entire food system, such as the fruit and vegetable production/marketing system, simply will not work. However, a word of caution must be said regarding the degree of restriction. In almost all cases where market interventions are introduced into an industry or a subsystem of an industry, there will likely be some form of impact on some other industry or some other subsystem of the industry. For example, if the fruit and vegetable export industry is selected for rapid reconnaissance study, excluding the evaluation of the impact of products culled from the export market entering the domestic market could be disastrous. Or introducing technology into the fruit and vegetable marketing system that drastically reduces postharvest losses and increases the quantity of vegetables in the market could lower prices to farmers who

may reduce acreage planted, as well as the demand for fertilizer and other factor inputs. It is important to assess the impact of reduced demand for fertilizer and other inputs on the input production/distribution system. Thus, it is not always possible or, in fact, advisable to restrict the market study to a single subsystem without the ability to expand the study to include analysis of other impacted subsystems. This is particularly critical when policy makers are to be influenced by the findings of the study.

3. The most significant shortcoming of the paper "Rapid Reconnaissance Guidelines for Agricultural Marketing and Food Systems Research in Developing Countries" is limitation of the key areas of investigation in Rapid Reconnaissance (Table 2). This table covers very well normally accepted areas of investigation that an economist would cover. It does not, however, cover other factors which impact the performance of the marketing system, particularly sociological factors. Also not covered by the items in the table are factors inherent in the production system, i.e., cultural practices, rotations, irrigation, etc., that can have significant impact on the ability to successfully initiate certain market interventions and/or develop orderly marketing. In addition, there is no mention of evaluating postharvest losses in the marketing system--one of the major causes of wide marketing margins particularly in perishable commodities. These areas need to be added to the listing of key areas of investigation which will result in considerable strengthening of the technique.
4. The paper is very good at describing the mechanics of conducting the reconnaissance and should suffice for assisting members of reconnaissance teams to initiate and carry out a meaningful study.
5. The Postharvest Institute at the University of Idaho, in cooperation with several other international organizations, has designed a methodology to utilize mid-level developing country agricultural agents to begin the process of identifying postharvest losses in fruits and vegetables. Without having it in mind in the early design stages, it now appears that there are complementary aspects between the Rapid Reconnaissance and Postharvest Methodologies. The complementary aspects are:
 - a. Both Methodologies are designed to focus on regional marketing problems within a few related commodities per study; and
 - b. The Postharvest Methodology requires a preliminary overview of the organization and conduct of the marketing system before the data collection process before the actual assessment begins. It appears that this methodology, now in draft form, complements the rapid reconnaissance Methodology since it primarily consists of field questions designed to identify the various factors affecting the performance of the production/marketing system.

The Postharvest Methodology is designed to be conducted primarily by in-country personnel. As proposed, higher level, in-country technical specialists will supervise the regional studies on particular commodities, but mid-level agricultural agents will be responsible for the collection of data. As originally designed, this Methodology would focus on

identifying areas where postharvest losses occur. However, after the initial draft was completed, the manual entitled "Identification of Causes and Solutions for Postharvest Losses", in its draft form, appeared to offer additional benefits in identifying aberrations that affect the performance and conduct of the overall marketing system and pinpointing of areas where research is needed to improve the quality of the product. The Postharvest Methodology has not been field tested as of the date of this report. Plans are being formulated to conduct field tests in 1987 in a number of countries.

It is proposed that an effort be made to determine if the two Methodologies can be integrated in such a way as to better assist in solving developing country market and postharvest loss problems.