

**UPLAND DEVELOPMENT PROGRAMME IN  
SOUTHERN MINDANAO (UDP)**

**MARKETING TRAINING MANUAL**

**For**

**LGU MARKETING and EXTENSION OFFICERS**

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# **Marketing Training Manual for Local Government Unit Marketing and Extension Officers**

## **Foreword**

If farmers are to increase production, more attention needs to be paid to the fact that their output must be marketed at a rewarding price. Commercialisation of the small farm sector requires the development of market-orientated production, as opposed to the occasional sale of subsistence surpluses. Success in commercialising this sector thus depends on the orientation of production to meet market demand and on the removal, or reduction, of a broad range of marketing constraints.

In most countries marketing problems are currently regarded as beyond the scope of field-level agricultural extension workers who are the officers in direct contact with the farmers. Even when extension workers are able to identify marketing problems faced by farmers their lack of expertise in this field, or knowledge of appropriate sources of assistance, makes them unable to help.

This manual is aimed at giving marketing officers and field-level extension officers a better understanding of the marketing process and the particular features of the marketing of the kind of high value crops that UDP will be promoting. It should enable them to assist and advise producers in reorienting their enterprises away from subsistence cropping to more market orientated systems.

## Introduction

Marketing, to people who are not familiar with it or trained in it sometimes appears more of an art than a science and is often surrounded by a certain air of mystery. While everybody may not be a natural born salesman any more than everybody is not an opera singer or a great film star, this does not mean that we can not have an understanding of marketing. In fact there is a big difference between marketing and selling. A good marketer may not be a good sales person and a good sales person may not make a good marketer. Marketing is a process of which selling is just one part.

While marketing is not exactly a science it is a process which can be broken down into logical steps. Through training, therefore, we can gain an understanding of the marketing process and acquire the skills necessary to perform or advise on the marketing function. While peoples talents for marketing and their interest in it will vary an understanding of the process and the difference between marketing and selling should enable extension officers to greatly assist their farmer clients to improve their lively hood.

The author has deliberately refrained from naming this a horticultural marketing manual in order to emphasise the fundamental nature of marketing regardless of what is being marketed.

The manual sets out to:

- explain briefly how marketing has developed
- the place of marketing in society and in organisations
- give an insight into some basic marketing theory
- describe marketing functions
- apply the theory to some marketing of agricultural products

It also examines the role of the extension service and other support agencies. In particular it deals with the role of the extension officer in assisting their farmer clients in improving their income through improved market led activities. Potential role conflicts are examined and explained and their potential to disrupt the relationship between the extension officer and his/her constituents.

It also explains briefly what marketing costs are and how they are calculated. The section on quality gives an overview of quality and the different quality perceptions and how these can affect our approach to quality.

Market research, business planning and production planning are explained.

In the final section it looks at some of the more common mistakes made in marketing, particularly at the policy level.

## **1.0 The Role of the Extension Service**

### **1.1 What is the role and function of an agricultural extension service?**

If agricultural communities are to improve their living standards they need to adopt new technology. This will include improved production, harvesting and marketing of existing commodities and diversifying the production into new enterprises. These enterprises will not be "new to the world" but they will be new to the farmer.

Growing urban populations are creating an ever increasing demand for food. This increased demand is both for staple foods and increasingly for a bigger variety of non staple products. If this demand is to be met from domestic resources rather than by importing, Philippino farmers need to be trained in the techniques involved.

There are also opportunities to develop production for export.

Activities of farmers also affect others through their impact on the environment. Often individual farmers are not aware of the downstream effects of their activities. But even if they are, they are unable to do anything about it because of lack of knowledge or resources.

The extension service therefore can be seen to have a dual mandate:

1. to bring about change by raising the awareness of the agricultural community
2. to deliver the necessary improved technology

The message can be delivered in a reactive or proactive way. Reactive is to sit and wait for farmers to request assistance. Proactive is to go out to farmers and to aggressively deliver the message.

The expression *demand driven* has become a buzzword in this context. This could be taken to imply that extension workers should only offer their services to those who request them. I believe this is a mistake. The extension service



needs to market itself and create the demand. Extension workers need to make themselves known to the target communities and gain their confidence and respect. In particular the role of change agent demands that the proactive approach be adopted.

How the message can be delivered is always subject to some debate, but no matter what the mechanism the key person at the community level is the extension officer.

Some people advocate only working with groups, saying it is a more efficient use of the extension officers' time. Frequently the ones who need the assistance of the extension officer most do not come to meetings. Often, especially for training meetings the head of the household or some other senior family member may attend but these may not be the people actually going to the field.

It is rare at training sessions for people leaving the meeting to say that they do not understand what was being taught. In fact they may well believe that they understand it but in actual fact be quite wide of the mark. This can also be the case at demonstrations. It can not be assumed that just because something is taught in a classroom session or even in a field demonstration that it has been understood and absorbed. All training sessions should be followed up by field visits. This is the only reliable way to check if a message is clearly understood or if a new technique has been mastered.

The best way of finding out what is going on in an area is to get out into the fields and speak to individuals. It is much easier to gain the confidence of people and establish rapport with this approach. Individuals will also usually be much more inclined to discuss their problems, hopes and plans on a one-to-one basis. It is important therefore that individuals are not ignored at the expense of the assumed efficiency of working with groups.

Extension officers have a key role in helping farmers improve their incomes. To do this they give advice on many different aspects of the farmers' enterprises. We have seen that marketing is a means to assist farmers in improving incomes. The extension officer has an important role to play here.

## **1.2 The role of the extension officer in marketing**

The extension officer can not be an expert in all activities but s/he must have an understanding of all the components where information is to be disseminated. The extension officer should have enough knowledge and understanding of the component to be able to deliver basic extension.

One very important point needs to be made here. **The extension officer is an advisor. It is not the function of the extension officer to market farmers produce any more than it is not their function to go out into the fields and do the weeding or spraying.** Marketing is the responsibility of the producers or of their organisations or agents. The goods producers or the service providers are the ones who take the risks and who stand to profit from their endeavours. Their enterprises are their responsibility and it would be unfair and in the long run unsustainable to transfer that responsibility onto their advisors or the LGUs.

The generation of market information will not be primarily the function of the extension officer but it will be the EO's responsibility to advise and train farmers on how to produce product that will meet market requirements and to help them to understand the marketing process.

### **1.3 Role conflict**

For an extension officer to perform effectively s/he must be able to gain and retain the trust of their farmers. Extension officers should never be put into situations which can conflict with this. If they lose the trust of their farmers they are no longer able to do their jobs effectively. Rather than the farmers seeking them out they will avoid them. It is for these reasons that this writer believes that extension officers should not be expected to take on the role of marketing farmers products, making decisions on credit or be asked to collect outstanding loans. They are not bankers. They are not debt collectors. They are not wholesalers or commission agents. They should not be expected to negotiate prices or contracts. Their function is to assist and advise farmers to undertake these activities on their own behalf, or in the case of voluntary associations on behalf of their members.

In the case of market studies or other such activities the farmers or their representatives should be involved as much as possible at all levels. The farmers should be encouraged to interpret the information themselves and as far as possible make their own decisions and plans. Obviously the experienced

extension agent has a pivotal role in helping with this interpretation and planning, but the plans must be the farmers own.

## **2.0 The role of marketing**

### **2.1 How does marketing develop and why is marketing important?**

In very primitive societies there is a large degree of self-sufficiency, with little dependence on outside trade. Trade where it does exist is largely in the form of barter and usually for a few unsophisticated items. Within the society there is little specialisation of roles and activities, there are however some. Women usually gather and prepare food while the men are responsible for hunting and protecting the community.

As society develops more and more specialisation occurs and population distributions change. More and more people tend to concentrate in urban areas. The economic and other benefits of increased specialisation have long been recognised. Farmers need tools to till their soil. Pots and pans and stoves are needed for cooking. Vehicles of various levels of sophistication are needed for transport of people and goods. It is beyond the resources of each individual to produce all these goods. As trade develops more and more support activities are also needed. These services include transport, financial services, public utilities, legal services and many more.

Changing demographics have meant that more and more people have moved further from their food sources. Populations in developing countries are expanding, normally at around three percent a year. Urban populations, however, are expanding on average at about four percent a year. This means that the number of people needing to be fed by the rural communities will double in 16 years. In addition, since the amount and variety of food eaten by each individual normally increases as people become wealthier, the supply of food for the towns and cities will need to double approximately every 10 to 14 years.

For agriculture to feed this growing urban population food production must change from subsistence farming (that is, just providing enough food for the farmer and the immediate family) to commercial farming (producing surpluses for sale). Although proportionately there will be fewer farmers, their role will

become ever more important because their task will be to feed the growing urban populations. To do so will require the farmer to become more specialised and more skilled so that more food can be produced. Production is only one part of the story. The food must reach the consumer in a form in which the consumer is willing to exchange some of his or her money for the benefits the product offers.

We can see how this increase in population and change in population distribution will create new or improved opportunities. But opportunities are not enough. We must be able to exploit these opportunities. Consumers need to find goods and services which they need and goods and service providers need to make potential customers aware of what they offer and make their products available. The producer must also persuade the consumer to exchange their money for his or her products

Marketing is the process that facilitates these exchanges. A simple definition of marketing might be that it is "the bridge that links the producer to the consumer". It identifies the consumers wants, identifies products that will satisfy these wants and make them available in a form which the consumer finds convenient.

## **2.2 What is Marketing?**

Before we attempt a definition of marketing we will first discuss something about what motivates consumers to part with their cash in exchange for products and services.

Maslow argues that people are motivated by a five level need hierarchy. A **need** is the basic force that drives consumers to take action and engage in exchanges. An unsatisfied need is a gap between a customers desired state and their actual state. He believes that lower level physiological needs must be satisfied first before higher level needs are activated.

We all have basic physical needs critical to our survival, such as food, drink, warmth, shelter and sleep. It is those needs that motivate the consumption behaviour of individuals, and as we can see they are few and basic. These needs are not created by marketers or by other social forces, they flow from our basic biological and psychological makeup.

**Wants** reflect how we desire to fulfil those needs. We all need food to sustain us. But we do not all want the same food to satisfy this need or we do not always want the same food at every meal. Some of us want rice, others want potatoes or bread. Sometimes we want meat and sometimes fish. We can see therefore that there are many different ways to satisfy the same basic need.

When we buy something we are not really buying a product, we are really buying the benefits that this product confers on us. Different customers will seek different benefits from a product therefore they will use different choice criteria and attach different importance to the features of a particular product within a product class. For example, many people like pineapples and eat them regularly. Some people, though, particularly like fresh pineapple and will be prepared to go to considerable trouble to seek out a source of supply and will go regularly to procure it. They will then take the trouble to peel it and remove the hard core. Others who like pineapple place a far higher importance on convenience and would much prefer to stock up their shelves with tinned product and peel it with a can opener and will be prepared to pay extra for this convenience.

No matter what product or service we are looking at it is the same basic forces that motivate us. Therefore we should realise that while this material is aimed primarily at people involved in the marketing of agricultural products and services the same basic marketing theory applies to all products and services. There is not one theory for agricultural products and a different one for aeroplanes. The marketing managers of large successful corporations marketing anything from Jumbo Jets to luxury motor cars or breakfast cereals or fruit and vegetables to the proprietors of small businesses apply the same basic marketing principles to achieve success. These could be described simply as **find out who your customers are, find out what they want and then develop and supply products that satisfy those wants better than anybody else does.** In all cases this must be done at a profit or of course you can not continue in business.

We can see that if we know what consumers needs are and how they want to satisfy them and we can produce goods or services that satisfy those wants it will be much easier to persuade the customer to buy our product. We should try then to focus on satisfying needs rather than on products per se.

Marketing anticipates and measures the importance of needs and wants of a group of consumers and responds with a flow of need satisfying goods and services. Accomplishing this requires the enterprise to:

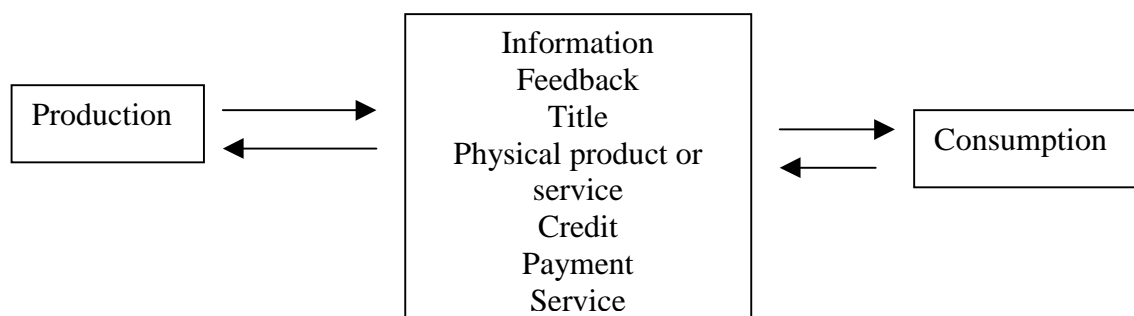
- Target those markets most compatible with its resources
- Produce products that meet those needs at least as well or better than the competition
- Make the products readily available
- Develop customer awareness
- Obtain feedback from the market

We now have a more comprehensive definition of marketing than simply as the bridge between the producer and the consumer.

This also gives us a clue to the functions that must be performed in order to carry out marketing successfully. These may include grading, packaging, storing, transporting, promoting, providing credit etc.

Before an exchange can take place a series of flows must occur

*Fig 1. Flows necessary for exchange*



The first thing that must flow is information. The producer must have the information from the market - **what does the customer want.**

The market must then know if the product is available. If customers do not know that your product is there how are they going to purchase it.

The product must then move from producer to consumer. This movement can take place in a number of different ways and can be facilitated by a number of intermediaries.

The totality of these various agencies between producer and consumer is commonly referred to as the **Marketing Chain**. The longer this chain usually the more expensive it becomes and this is either reflected in higher consumer prices or lower producer prices or a combination of both.

Where the major share of these **marketing costs** are eventually borne depends on the relative bargaining strength of those involved.

The form in which a product arrives at market, the quality, packaging and presentation are all a result of the marketing function and how well it is performed.



Marketing, therefore is not just simply selling. It is a process by which we identify customers preferred wants to satisfy their basic needs and concerns not just the physical product, but also how it is packaged and presented, when and how it is delivered and where it is available. It is also the process by which information about customer requirements are conveyed to producers and how production and delivery are scheduled. It also should convey information back to the producer on how the product is perceived in the market.

## **3.0 Marketing of agricultural products**

### **3.1 Factors influencing agricultural marketing**

In subsistence agriculture a farmer will mainly be feeding himself and his neighbours. The local community's taste and requirements are well understood. Transport and post-harvest losses are not serious problems. As the populations of the cities expand farmers have the added responsibility of feeding not only the rural market but also the growing distant urban markets. The farmer therefore has to take on commercial and marketing skills. Marketing is the process by which the space between the producer and the consumer is bridged. The process obviously involves transport and techniques for minimising crop losses. An effective distribution system will also require the establishment of rural businesses such as truck drivers and packaging manufacturers, contractors and wholesalers. The production/marketing chain is a two way process. Produce flows from the rural areas into the cities and money and market information should flow back. As tastes in the city market evolve the rural community can use this market information to target its production accordingly.

In horticultural farming, where prices are rarely regulated, financial viability depends as much upon business and marketing skills as on the farmer's technical expertise. It is high-value crops which are often a crucial component of viable small farms. High value crops will feature prominently in UDP. This manual is a response to that growing farmer need for commercial and marketing knowledge and is designed to help their advisors to understand the process in order to assist the change from subsistence to commercial agriculture.

While the marketing process is essentially the same for all product classes obviously different product classes do have some unique features that will influence the various elements of the marketing programme. A number of factors affect the nature of the demand for a product and the design of marketing programmes. These include:

- Characteristics of the product
- Nature of production and consumption
- The role of the product in society

### **3.2 Characteristics of agricultural products**

A broad definition of agricultural products will include forest products, livestock products, grains, industrial commodities such as cotton, edible oils and what are loosely described as horticultural products. Agricultural commodities share some generic characteristics which affect marketing programmes.

Typically 80% of farm products are

- purchased by processors and manufacturers
- produced by many small farmers located far from consumer markets
- produced seasonally
- distribution channels involve many middlemen

The middlemen

- buy products from many farmers
- assemble and store them for shipment throughout the year to processors and exporters

There is little differentiation between the products of different farmers - this makes branding relatively unimportant.

Usually there is little promotional activity except some cooperative advertising by trade groups to stimulate primary demand

### **3.3 Characteristics of horticultural crops**

Each group of agricultural commodities has its own special characteristics. Some such as forest products are relatively non-perishable and have low value to volume ratio. At the other end of the scale are horticultural crops.

Horticultural products are mainly sold fresh; some are eaten raw while others are cooked. Some horticultural products have traditionally been processed when no other form of storage was available, e.g. dried fruit and jams. As society develops and becomes more affluent the market for processed and prepared horticultural products develops. A market also develops for horticultural products such as flowers and house and garden plants which are sold for purely aesthetic reasons. Increased wealth also brings with it an increased demand for product diversity in the form of new crops, off-season supplies and different flavours.

Horticultural products have a number of characteristics which influence demand and marketing.

Generally, but not exclusively, they are not staple crops. They are:

- mainly eaten for their contribution to the flavour and interest of food and for the supply of minor but essential nutrients, especially vitamins
- generally demand is quite sensitive to price changes
- demand varies considerably with the income of the buyer
- many crops are not traded in large volumes, therefore markets are relatively limited
- they are generally highly perishable, which means a short shelf life and rapid deterioration in quality especially if there is poor post harvest handling
- there is a high degree of substitution - if one product is too highly priced the consumer will generally buy another
- the products are normally traded in a very free market where price is determined by supply and demand.

All these factors explain why demand and prices for horticultural crops vary widely even over very short time periods and distances. Wholesale prices can vary with the time of the day never mind from day to day or month to month. Prices can also vary considerably from one market to another. Hence the need for a good and up to date market information system.

This extreme variance in price makes horticultural production potentially both very profitable and very risky. Often, success depends on marketing skills and on obtaining good prices rather than on production expertise.

In extreme cases of over-supply, prices fall so low that farmers are best advised to minimise their loss by not harvesting their crops as the price they would receive would not cover their marketing costs.

*Perhaps one of the most important characteristics of horticultural crops stems from their perishability. Horticultural crops require the highest levels of marketing skills but are often produced by people who traditionally possess the lowest skills levels.*

### **3.4 The role of a product in the diet**

It was pointed out above that that these high value crops are rarely staple crops. This means that they are not necessary for life support. This does not mean that fruits and vegetables should not be included in our diets, indeed they should be

and are an important constituent of a well balanced and healthy diet. We can, however, survive without eating mangoes or even meat and high income families could survive without rice or bread. After all millions of people outside of Ireland survive without eating potatoes (God only knows how, but they do). But families with low disposable income can not afford high priced substitutes for rice or corn. The main portion of their diet every day consists of rice or corn products. If they have some extra cash they may purchase fruit or meat to supplement their diet. But if their income declines or the price of rice and corn increase they will still buy the same amount of rice and reduce their purchases of high value products.

Some products such as spices are used to flavour food and are used in very small quantities. Demand for these is largely unaffected by price. In fact if there is a scarcity of product prices can rise very high. On the other hand if there is a surplus prices will fall drastically as lower prices will not stimulate demand (you can only tolerate so much pepper in your food).

Fruit and vegetables are largely substitutable for other fruits and vegetables. In practice this means that if the price of a fruit rises above a certain level consumers will seek out an alternative fruit which they consider better value (they do not stop buying fruit). As disposable income rises they will also be inclined to buy more of these products. The opposite is true when income falls. Since the onset of the Asian financial crises imports of fruits into many Asian countries have dropped considerably. With these types of products it is not just the price of the product itself that affects demand but also the price of substitutes.

### **3.5 Characteristics of the farming sector**

At the farmer level the most disadvantaged farmers are those with small units of land. These farmers will find that they cannot generate sufficient funds from their small land area to support themselves and their families by growing only traditional crops, e.g. corn or rice. These crops produce relatively low value per unit area. Small farmers will find it difficult to compete with produce grown by large farms using mechanisation.

In developed agriculture successful small farms can and do survive. We can learn lessons from their survival. Viable small farms tend to specialise in high

output enterprises. These are crop or livestock systems which are capable of generating high incomes per unit of land. Typical examples in livestock are dairy and chickens, and in crops are fruit, vegetables and flowers.

In Europe the smallest units tend to be devoted to protected cropping and nurseries and will be about 1% of the land area of the average cereal farm. In between will be dairy farms, vegetable farms and fruit production. If one looks at the situation here in the Philippines the same ranking would appear to be the obvious choice.

It is by understanding the strengths and weaknesses of different categories of farmers that it is possible to promote crops and cropping systems which favour the smaller farm. The smaller family farms tend to have a greater supply of available lower cost labour. They can therefore farm much more intensively and on the production of commodities which require operations that are not easily mechanised. For example, transplanting, pruning, training and multiple hand harvesting. Many of these farmers do not have the knowledge or skills needed to produce these commodities or even when they do, they do not have the necessary marketing skills to exploit their potential advantage. These growers need help in producing the required quality product economically and then in accessing markets. This is achieved by providing them with good production advice and market information to strengthen their ability to negotiate. They are also often starved for capital to develop their enterprises.

The different section below deal with different aspects of marketing of agricultural produce. We will also look at the service industry. Some of the more common mistakes will also be discussed briefly.

### 3.6 Some major horticultural products

<b>Tree fruit</b>	Orange, lemon, lime, mandarin, pumelo, mango, banana, guava, lychee, pear, rambutan, durian, papaya, mangosteen, date.
<b>Vine fruit</b>	Grape, kiwi fruit (or Chinese gooseberry).
<b>Other fruit</b>	Strawberry, pineapple, watermelon, sweet melon, raspberry, blackberry, cranberry, blueberry, loganberry.
<b>Tree nuts</b>	Cashew, walnut, hazelnut, macadamia, pistachio, pecan, coconut, almond, Brazil.
<b>Fruit used as vegetables</b>	Breadfruit, avocado, tomato, egg plant (brinjal or aubergines) hot pepper, sweet pepper, karella (or bitter gourd), squash, marrow, gourd, cucumber, pumpkin, plantain, choyote.
<b>Vegetables derived from seeds and flowers</b>	Broccoli, cauliflower, artichoke, pea, bean, lentil, chickpea, broad bean, okra, sweetcorn.
<b>Leaf and stem vegetables</b>	Lettuce, cabbage, spinach, chard, brussels sprout, endive, watercress, celery, asparagus, green onion, leek, amaranthus, bean sprout, Chinese cabbage, Chinese celery, spinach, chicory.
<b>Root vegetables</b>	Potato, sweet potato, cassava, yam, taro, carrot, turnip, parsnip, beetroot, Jerusalem artichoke
<b>Herbs</b>	Parsley, mint, coriander, dill, basil, rosemary, thyme, sage.
<b>Spices</b>	Black pepper, chilli pepper, cardamon, ginger, clove, cinnamon, bay leaf, turmeric.
<b>Cut flowers</b>	Rose, chrysanthemum, carnation, gladiolus, tulip, narcissus, orchid.
<b>Cut foliage</b>	Asparagus tern, leather leaf fern.

**Tropical plants** Dieffenbachia, coleus, yucca, cordyline, dracaena, monstera, fatshedera, ficus, maranta.

**Temperate plants for garden** Roses, ornamental shrubs, herbaceous flowers, ornamental conifers, flowering bulbs.



## 4.0 Quality

### 4.1 What is quality?

Quality is a word that is used in connection with just about every good or service produced. It is a term we all use. We speak about good quality, poor quality, better quality or worse quality. But what is quality? How do we measure quality or can it be measured? There are a number of quality gurus who have all defined quality in different ways. If these world renowned figures can not agree on one definition of quality it gives us an idea on how difficult it is to define quality precisely and how many dimensions there are to quality. Recently business writers have started to refer more and more to total quality management (TQM). TQM refers not just to the physical quality of a product or service but to such other aspects as order processing, invoicing, delivery schedules, after sales service, clarity and comprehensiveness of operating instructions and almost anything else that will affect our perception of a product.

Quality therefore can have many dimensions and can take many forms. Very often the physical appearance of a product is a major quality determinant even though it may have no bearing on the quality or the usefulness or functionality of a product. If we have just redecorated our kitchen and are buying a new refrigerator, we may decide that we want a particular colour to blend with the new décor. Now as regards the functioning of a refrigerator it matters not at all if it is green, brown, pink, white or multicoloured. But if the lady of the house wants a particular shade of blue and nothing else will do, then the manufacturer who produces that particular colour has a clear quality advantage over a manufacturer who does not.

Appearance is a major quality attribute in hotels and restaurants and department stores. For processing, on the other hand, sugar content, total solids, ease of peeling or size will be far more important attributes.

The use the product will be put to can also have a major bearing. For some processing operations fruit should be green (mangoes for chutney making). Ripe fruit will be unacceptable quality for this purpose. Green fruit will be low quality for puree manufacture.

It is important therefore to find out the quality requirement of the market segment being served.

The ultimate objective of the production, handling and distribution of fresh fruits and vegetables is to satisfy consumers. Fruits and vegetables are also processed into various product forms in order to preserve them. There are a number different quality attributes and depending on the end use and the end user these will have more or less relative importance.

In recent years quality has been redefined on a comparative basis (relative to competitive products) in contrast to fixed, internal standards. It is generally agreed that consumer satisfaction is related to product quality. Also, quality can relate to the physical attributes of the product itself, or it can relate to perceptions. Perceptions can derive from such cues as price, brand name, advertising, packaging, reputation, country of origin etc. There are many definitions of quality but it is a difficult concept to define precisely or succinctly. It is one of those things that *we know it when we see it but when asked to describe it find it difficult to put into words*. In the case of fruits and vegetables the measurement of some quality attributes can also be very difficult especially in the area of consumer acceptability.

One person may view quality as an absence of defects (reliability) while another is looking for something extra (superior performance), thus regarding quality as a degree of excellence. For food products quality means different things to different members within the distribution chain. Food quality embraces both

sensory attributes that are readily perceived by the human senses and hidden attributes such as safety (pesticide residues) and nutrition that require sophisticated instrumentation to measure. For processing such quality attributes as total solids, total sugars or content of a particular sugar, juice purity, ease of peeling, size and shape or a variety of others attributes may be important.

## **4.2 Quality perspectives**

Quality of a fresh fruit or vegetable changes as it proceeds from harvest to consumer. The relative importance of different quality attributes changes from handling to purchase to consumption. There is an old adage that "beauty is in the eye of the beholder". Quality depends on the perspective of the viewer and often like beauty is in the eye of the beholder.

An understanding of these different perspectives in post harvest distribution is essential in any attempt to help producers achieve the quality standards required by the market. Product quality is usually viewed from two different perspectives:

- Product orientated perspective - where quality is viewed as a bundle of attributes that are inherent in a product and can be readily quantified throughout handling and distribution
- Consumer orientated perspective - which views quality in terms of consumer satisfaction, a much less tangible and less quantifiable concept.

Depending on the end use, one or other of these perspectives will be more or less important. The reader is referred to the section in the Guide to Marketing, which compares and contrasts Industrial buying and Consumer buying decision processes.

Generally speaking processors will be more product orientated while the fresh market will be more consumer oriented.

Sometimes, of course the distinction is not clear cut. Colour, which can be external or internal can be included in one or both. Rind or peel colour may be very important to the consumer, even though they may peel the product before consumption. To the processor, if the product is going to be peeled before processing external colour is unimportant, apart maybe as an indication of stage of ripeness or disease. If no peeling is to take place then colour will be a major attribute. Internal colour is likely to be important to both.

Selection of measurement techniques and development of product standards depend on the orientation. Failure to appreciate the differences in perspective can result in good quality being produced but the wrong quality for the particular market.

### **4.3 Product-oriented quality**

Product orientated attributes are usually much easier to measure and most post harvest research (physiological as well as technological) assumes a product orientation to quality. Quality is defined as a series of attributes selected on the basis of accuracy and precision of measurement. These attributes are in turn used to evaluate the effect of a breeding programme, chemical or quarantine treatment, handling technique or system, set of storage conditions or other post harvest variable on the product. Product-oriented quality is readily defined and clearly understood. A product orientation provides a clear assessment of which treatments or techniques are superior or inferior within the

context of study objectives. It also provides an objective measurement for payment for produce when prices are agreed and based on a scale related to one or more physical dimension e.g. moisture content, fibre length or thickness, brix and etc.

#### **4.4 Consumer-oriented quality**

A consumer orientation to quality requires an understanding of consumer behaviour and is focused on predicting product performance in the marketplace. The consumer is frequently viewed as a monolith with consistent preferences. Realistically consumer preferences vary widely from one cultural or demographic perspective to another, from one consumer to another within a cultural or demographic group, or even within the same consumer depending on many factors including current mood and intended use of the product or change in disposable income.

Critical quality attributes that drive product acceptability can be more easily identified using a consumer-oriented approach, but these attributes may be difficult to measure accurately and precisely. While consumers represent the only valid source of preference or acceptability, they are not good at expressing the rationale for these preferences and in some cases as for example, baby foods the opinion of the consumer can not be ascertained. Furthermore, it may be difficult to quantify these attributes during handling and storage. Quality is important to the consumer at only two points - purchase and consumption

#### **4.5 Implications of quality orientation**

Product oriented quality is well suited to meet the needs of distributors. It provides the best means of developing and assessing technical advances in post

harvest handling. It is more likely to emphasise appearance leading to extended shelf life and lower prices at the expense of consumer attributes. Consumer oriented quality is better suited to produce a distribution system that is sensitive to the needs of consumers. If product is to be consumed within a short time of purchase the consumer will not be concerned with shelf life. If a product has passed its shelf life it will just not be bought.

Adherence to one type of orientation with a disregard of the other can have serious consequences. The overemphasis on a product orientation to quality that has dominated the American and European market in fresh fruits and vegetables has bred an over reliance on appearance at a sacrifice of flavour. A good understanding of post harvest physiology and shelf life extension has not translated into greater acceptance of fruit and vegetable quality. This approach tended to emphasise the one size-fits-all approach.

Plant breeders are now placing more emphasis on such quality attributes as flavour of food or scent of roses or other ornamentals. While size, shape and colour still remain important quality attributes others are being added.

A switch to a consumer orientation presents a different set of problems, particularly with respect to consumer variation. A better appreciation of differences in quality orientation should lead to development of better handling systems that are more responsive to consumer desires. A distribution enterprise that is willing to incorporate a consumer oriented approach to post harvest handling of fresh

fruits and vegetables is likely to be more successful in the long run.

#### **4.6 Quality requirements**

From the above it can be seen that quality is indeed a multi-faceted item and that it is virtually impossible to produce an item that will satisfy the quality requirements of all markets. In fact we have seen that the quality requirements of different markets are often contradictory.

Some markets require regular supplies. Although this has nothing to do with the physical quality of a product it has major implications for suppliers. The supplier that can produce a regular supply of product has a clear quality advantage over the one who can not. Slightly inferior physical quality may be acceptable in exchange for regularity.

It is vital therefore to have a clear knowledge and understanding of the quality requirements of the market being served. All quality requirements of the market should be understood and listed.

Strange as it may seem you can also have too high quality, or at least produce a level of quality which the market is not prepared to pay a premium for. In such cases if the extra quality costs the producer money then the quality should be reduced to the market requirement.

This brings us to some other dimensions of quality. Quality is not only to do with the physical product. It can also be the packaging or presentation or some other attribute. So, if the market does not want, or at least is not prepared to pay for fruit in expensive polystyrene cartons or carrots individually wrapped it is a waste of the producers time and money doing it.

Generally, though higher quality produce will normally obtain better prices than average produce and, in situations of oversupply, will be the first produce to clear and may even be the only saleable produce.

The inherent physical quality of a crop product is dependent on a number of factors. These will include:

- growing conditions
- variety

- standard of husbandry

Grading and packing does not improve physical quality. Grading separates items that differ in some physical attribute. Packaging helps to preserve the physical condition of the product. Both operations do however cost money. The farmer must determine whether the market is prepared to pay for these operations. If there is no gain then it is a futile exercise. A situation may arise when at some times during the season the cost of producing the extra quality is justified and at other times not.

#### **4.7 Quality specifications**

Occasionally export markets will have stipulated grading standards which have to be met by the exporter. In practice these are normally minimum standards and, because of the transport costs involved, only top quality produce is exported. It is very important to establish directly from the potential market what quality standards are required, how produce should be presented, what size and type of packaging is preferred and what price differences exist between the various grades? Generally this information is readily available from middlemen and wholesalers. Sometimes they will give actual size requirements and may specify particular varieties or appearance characteristics which they favour.

Horticultural quality is very difficult to communicate merely through words. It is a tremendous advantage to be able to show photographs of what is considered to be good, average and poor quality produce. It is even better if the farmers can be brought to the market to see for themselves the requirements and to see the difficulties that poor quality causes. It is also useful for them to see how product is handled as it moves through the marketing channel. This will give them a better understanding of how produce can get damaged and what standard of packaging is required to protect it.

After talking to the wholesale market the extension officer should help the producers to attempt to draw up a crop quality specification. When done this should be validated with the market.

Very often there are differences between markets in their demand for quality produce. For example, it may be possible to supply the major cities with the highest quality produce while the medium quality produce is sold to nearby



towns. The poorest quality is sold in the villages and outgrades are used as animal feed. In the case of timber crops some produce will be suitable for saw logs, some for plywood manufacture and product that does not meet the specification for either of these uses goes for pulp manufacture.

One other aspect of quality should not be forgotten. When a farmer is planting a particular crop he looks for a variety that will give him an acceptable yield, pest and disease resistance, drought tolerance and etc. This is why sometimes we have varieties that produce a superior quality product from the consumers or processors point of view but farmers will not produce it because the reduction in yield will not be compensated for by increased prices. When introducing new varieties the extension agent should bear this in mind. Sometimes however compromises have to be made and a balance struck between yield and market preferences.

In recent years organic production has become a major quality attribute for a growing market segment. Often consumers in this segment will accept lower performance on other quality dimensions in exchange for a guarantee that the product was grown using no chemical treatments. They may also be prepared to pay a higher price to compensate the producers for the lower yields obtained, but this is becoming less common.

Many marketers say the days of mass marketing have passed and that markets are becoming more and more segmented requiring a greater range of products. If this is true, and it appears to be, producers and channel members will need to be more sensitive to consumer quality preferences. The same product from different regions are often indistinguishable from each other. In such cases the only way product from

one producer can be differentiated from product from another area is on quality dimensions such as service, reliability of supplies and deliveries etc.

This is the market led approach as applied to quality. Listen to the customer - s/he is always right.

## 5.0 Market research

### 5.1 What is market research?

The American Marketing Association defines **marketing research** as *the function which links the consumer, customer, and public to the marketer through information - information used to identify and define marketing opportunities and problems; generate, refine and evaluate marketing actions; monitor marketing performance; and improve understanding of marketing as a process*

Before we conduct market research we should remember that one of the main purposes of the research is to establish whether there is a viable market for a product or service. We should not automatically assume that the result will be positive. The conclusion may be that the market does not provide a viable opportunity. If that is in fact the case we should not allow emotional attachments to ideas or products to overrule the hard evidence. Remember that while we might think that the world should be using particular products for environmental or health or other reasons it does not follow that this will automatically happen. Maybe in an ideal world this would indeed be the case, but wishful thinking does not make a market. So be prepared to accept the evidence whether it is good or bad.

### 5.2 Data Sources

All data will come from one of two sources:

- external secondary data - generated by outside agencies
- internal data -

Much information on marketing is available from external secondary sources. This is likely to be the main data source for much of the information which will be needed. For example, an individual who is considering starting a durian production enterprise will not undertake a detailed market study to generate information on the world market for durian. There will be much data available to guide the decision process.

On the other hand, if one is considering producing vegetables for the municipal market it may be necessary to conduct a survey of the market to generate information on the market as this information may not be readily available from secondary sources.

Internal data may be most useful on such items as cost of production, yields etc.

### **5.3 Product Information**

**The extension officer will be advising producers in relatively well defined areas on marketing. Through agro-ecological zoning we will know which crops will grow well in the production area and which will not. When we are doing market research there is no point in researching the market for products we can not produce. This is why we speak of products that are of interest.**

Different types of product information will be needed:

- information on the market potential
- information on market requirements in terms of quality, packaging, grading etc.
- technical information on the production, varieties etc

For market information some of the questions we must try to answer are:

- what are the products of interest which are in demand in the market
- what quantities does the market require
- where are the existing production areas (are there big transport costs etc)
- what type of production systems are being used by existing suppliers (have they got great scale advantages)
- are there well defined production seasons or can production be undertaken all year round,
- are there windows of opportunity
- have the areas we intend to produce in any comparative advantages - in terms of yield, quality, available labour, proximity to the market
- what are typical wholesale prices and do they vary during the year
- have prices been declining, staying steady or increasing
- has demand been declining or increasing and if so at what rate
- what are the marketing costs

If we identify products with potential then we must find out what the market requirements are:

- what are the quality requirements

- is the produce graded
- is the produce packed into any packaging material; if so what type, size and cost
- which varieties are acceptable to the market and which ones are not

We must now get some information on the production of the product. In the case of crops we will need to:

- estimate yield
- estimate production costs
- find out if there are any particular problems such as pests or diseases which might critically affect production
- can the product be stored
- what is the shelf life
- are there any particular post harvest handling operations which are critical
- are there production technologies which are beyond the capability of the potential producers
- is there a high risk of crop failure

#### **5.4 Input supply**

Questions on input supply also need to be addressed:

- is planting material (seeds or plants) of the right quality available in sufficient quantity
- are other inputs such as fertilizers, sprays and packing material available
- if specialised production equipment is required is it available
- is irrigation required

#### **5.5 Marketing channels**

The final piece of the jigsaw concerns getting the product to market. Assuming there are no physical barriers to transporting the product to market we must now examine the marketing channels. Decisions must be made here about which market channels to use. Will existing channels be used or will new channels be designed.

#### **5.6 What are marketing channels?**

Most goods in our economy are distributed through multiple institutions or "middlemen". These institutions are commonly referred to as **marketing**

**channels or channels of distribution.** These middlemen typically fall into four categories:

- **merchant wholesalers**, who typically take title to the goods and sell to other resellers (retailers), industrial and commercial customers. They rarely sell to individuals
- **agent middlemen**, who also sell mainly to resellers, industrial and commercial customers. They do not take title to the goods and often sell on commission
- **retailers**, who sell directly to final consumers for their personal use
- **facilitating agents**, such as advertising agencies, transport companies, storage firms, market research firms, collection agents, legal firms etc.

Sometimes the customer performs most of the marketing activities in an exchange. For example if we drive out to a local farm and buy some durian fruit, pay for it and bring it home to eat we are performing most of the activities necessary for the exchange to take place. Perhaps our exchange was facilitated by an advertisement in the newspaper or on the radio telling us that fruit was available at that location.

Sometimes most of the marketing activities are performed by the producer. For example Avon cosmetics and Tupperware are distributed directly to consumers either through mail order catalogues or thousands of part-time door to door sales people. These are examples of forward vertically integrated distribution systems. If a farmer decides to sell his produce by going from door to door he is also engaging in essentially the same type of forward integration.

Most products, however, are distributed through a system comprising a variety of institutions or middlemen, where each one performs part of the marketing function. Thus, a **marketing channel is the set of interdependent organisations involved in the process of making a product or service available for consumption or use by consumers or industrial users.**

Because agricultural products typically are produced far from the ultimate consumer and it is virtually impossible for the individual producer to control the entire marketing chain the entire channel or chain will not be of primary interest to the producer. If a farmer sells to a local trader, who collects at the farm gate and pays the farmer for the product, then that is really the part of the marketing

chain of interest to the farmer. If on the other hand the farmer decides to transport the product to a market some distance away and perhaps use an agent there to sell the product, then the channel of interest is much longer.

In order to make these decisions we must know:

- does a market channel exist
- is it effective
- what are the existing channels
- who are the channel members
- which channel members have the best reputation
- which have the worst reputation
- if it is a new product and no channel exists can a channel which handles other product be used

If there is no suitable marketing channel then the feasibility of setting up a channel must be investigated. The issues here will be:

- who is going to perform the marketing function
- will they be capable
- is there a reliable transport service
- is there sufficient finance

At this point the reader is referred to the *Guide to Marketing Costs and their Calculation*.

When all these pieces of information are put together the decision on the financial viability of the enterprise can be made.

## **5.7 Prices**

Price information is a critical part of market research. In a free market the price of a product is an indication of the demand for that product. Price is the mechanism by which the market signals demand. Increasing prices is a signal that the demand for the volume of product coming to the market is increasing, especially if the price increases are ahead of price increases in the same general category. Sometimes analysts would say that if prices are rising faster than inflation then demand is on the increase. A word of caution here, all sectors of the economy do not experience the same rates of inflation. Consumer inflation

in general could be increasing but the food sector might actually be experiencing price deflation or at least a rate different from the general rate.

Price trends over time are an important indicator of demand. Agricultural production is very dependent on environmental factors and these can change abruptly in relatively short periods. The el Nino phenomenon is well known in the Philippines and the effect it can have on production and consequently on prices. It is important therefore to try and look at price trends over a longer period or at least if there is a very sudden change in prices to try and gauge if it is caused by some temporary phenomenon or whether there is a change in overall demand. Great care should be taken when interpreting sudden and fairly substantial price increases. It is unusual for demand to suddenly increase so much and the reason for the price increase is more likely to be due to some interruption in supply. Such increases are most likely to be temporary. Price declines are more likely to be indications of a fall off in demand or that supplies are increasing at a faster rate than demand. This should set off some warning signals.

Price is of course basic to the calculations of the financial viability of an enterprise. Interpreting perishable crop prices presents its own problems. Prices can vary widely even on a daily basis and from area to area. Past prices are no guarantee of the prices which will be obtained in the future. Analysis of them will give guide prices for the future to be used in budgeting. Perhaps more importantly price analysis will also give an indication of the typical seasonality of prices and therefore show the best time to market crops.

There are normally two sources of price data, official price data and typical prices provided by the wholesalers. Official data is often recorded inaccurately and wholesalers must be considered an unreliable source of price data. Nevertheless, provided the extension officer understands the weaknesses of price analysis in predicting future prices, the work needs to be done to give a broad idea of typical prices and seasonal price patterns.

## **5.8 Seasonal price patterns**

Because of the variation in prices from year to year it is important to try to average out these differences by analysing the figures for a number of years. Six years is probably the maximum number of years worth examining. In practice



data, if available, usually only covers two or three years. Price data can also be somewhat out of date.

Accurate interpretation of the figures depends on a broad knowledge of the country, the different climates and the wealth of the consumers. Climatic conditions in the Philippines vary considerably. Some areas have distinct dry and wet seasons. Others are frequented by typhoons and other areas are typhoon free.

Metro Manila has a very large population whose income varies from very low to very high. Even though the percentage of the population on very high incomes might be relatively small it still represents a significant market segment.

Many products fetch a much higher price in Manila than in other areas and particularly during the typhoon season. This offers opportunity for producers who can produce during the off season in Luzon. Generally, though, consumers who pay a higher price for produce expect higher quality.

## **5.9 Averaging prices**

Sometimes prices are averaged in order to get a price to use in preparing crop budgets. This is a dangerous practice if we do not have supply information to enable us to arrive at a weighted average price.

In calculating an unweighted average no account is made of the fact that proportionately very little produce is sold at the high prices - as a result this average price is above the normal farmer price. Therefore an unweighted price is not a true average and using it for budgeting could lead to a wrong conclusion.

When weighted averages cannot be calculated the average price during the main supply season is generally used. Sometimes annual crops show a pattern of one high-priced year followed by a low priced one. This is a common phenomenon caused by many farmers seeing that one crop has achieved high prices and deciding to grow it themselves in the following year. The result is oversupply in the next year. There is a saying amongst market gardeners in northern Europe that you "should never follow a good market" or another is "dear seed cheap

potatoes". The latter one means that the price of planting material has gone high and this is an indication that the area being planted is increasing substantially.

With longer term crops such as tree fruits growers will often respond by planting trees because existing prices are high. As this is so often a collective response, when the new trees start cropping prices tend to drop. This does not mean of course that production will not be profitable but it does mean that producers will need to be more efficient.

### **5.10 Price rises and inflation**

Price rises can occur for a number of reasons:

- declining production
- increasing demand
- inflation

Inflation is normally the major contributor to price increases. It is important to see whether prices have in general been increasing faster than inflation. If this has been happening it is probably owing to increasing demand and therefore indicates good opportunities for more supplies. If, however, prices have not increased as fast as inflation this would suggest that further supplies will reduce the prices in real terms.

### **5.11 Strengths and weaknesses of official and unofficial prices**

By analysing price statistics it is possible to show price patterns and predict months when high prices can be achieved. Analysis shows whether prices are going up faster or slower than inflation and, using these figures, it is possible to predict likely future prices. As explained earlier, past prices do not necessarily reflect future prices. Horticultural marketing is like gambling: careful analysis helps improve the odds in favour of the grower. However, statistics are very often inaccurate and good judgement and especially the opinion of experienced market participants even if it seems to contradict the statistics should not be ignored.

Some of the errors which can occur have been discussed in the section on *Marketing Costs*. The subject is also explored further in the paper on *Market Information Systems*.

The extension officer should be aware that the prices collected are the prices obtained by the wholesaler or commission agent not what the farmer will receive. Marketing costs will have to be deducted.

Price data, like all data must be viewed with caution. Most confidence can be placed in the general price patterns but not necessarily the actual figures. It is often useful to plot price data on graphs. It is possible to learn a lot about the supply patterns to the market by remembering that in general high prices indicate low volumes and vice versa. If supply data are available this can also be plotted on a graph and compared with the price data.

Price data should also be collected from middlemen, be they contract sprayers, commission agents or wholesalers. This is essential in order to compare and check official price data. In the absence of official statistics, such people are the only source of price information.

For commercial reasons middlemen will often give distorted price information. For example, a middleman who sells on a commission basis will tend to exaggerate prices as it is in his best interests to encourage sales. Conversely a middleman who buys produce will often underestimate prices to discourage further supplies if he thinks this will provide competition.

## **5.12 Supply and volume**

***Production statistics.*** The quality and detail of production statistics varies considerably from country to country. Regional or provincial statistics giving crop areas can help to identify the major producing areas and their relative importance. This is useful in identifying competing areas. Some statistics will also give tonnages of crops produced. These figures are notoriously unreliable as they have to be based on crop areas multiplied by an estimate of yield. Yield figures used are often little more than guesses.

***Supply figures.*** Occasionally statistics are available on the monthly supply of individual product to the market, but this is rare. When plotted on a graph this can show times when market supplies are low.

It is possible to be able to 'read' from price data the typical supply patterns . Drawing up charts of the typical supply patterns of the major producing areas is a useful exercise in that it highlights shortfalls in supply and therefore possible

market opportunities. If details on supply and cropping area are available it is possible to compare the productivity of different areas and identify where there may be comparative advantage.

In any market research exercise it is important to try to assess the effect of increased supplies on the market. Obviously if the likely increased volume of crops will only add a few percent to the supply to the total market there is likely to be little market reaction. The more localised the market the more easily it will be to over supply it. For these local markets it is necessary to monitor the supply situation constantly.

### **5.13 Quality requirements**

We have discussed quality in an earlier section. An important part of the market research will be to determine the quality requirements of the particular market segment of interest.

It is important therefore to find out the quality requirement of the market segment being served.

Grading and packing does not improve physical quality. Grading separates items that differ in some physical attribute. Packaging helps to preserve the physical condition of the product. Both operations do however cost money. The farmer must determine whether the market is prepared to pay for these operations. If there is no gain then it is a futile exercise. A situation may arise when at some times during the season the cost of producing the extra quality is justified and at other times not.

### **5.14 Quality specifications**

Occasionally export markets will have stipulated grading standards which have to be met by the exporter. In practice these are normally minimum standards and, because of the transport costs involved, only top quality produce is exported. It is very important to establish directly from the potential market what quality standards are required, how produce should be presented, what size and type of packaging is preferred and what price differences exist between the various grades? Generally this information is readily available from middlemen and wholesalers. Sometimes they will give actual size requirements and may specify particular varieties or appearance characteristics which they favour.

Horticultural quality is very difficult to communicate merely through words. It is a tremendous advantage to be able to show photographs of what is considered to be good, average and poor quality produce. It is even better if the farmers can be brought to the market to see for themselves the requirements and to see the difficulties that poor quality causes. It is also useful for them to see how product is handled as it moves through the marketing channel. This will give them a better understanding of how produce can get damaged and what standard of packaging is required to protect it.

After talking to the wholesale market the extension officer should help the producers to attempt to draw up a crop quality specification. When done this should be validated with the market.

Very often there are differences between markets in their demand for quality produce. For example, it may be possible to supply the major cities with the highest quality produce while the medium quality produce is sold to nearby towns. The poorest quality is sold in the villages and outgrades are used as animal feed. In the case of timber crops some produce will be suitable for saw logs, some for plywood manufacture and product that does not meet the specification for either of these uses goes for pulp manufacture.

### **5.15 Packaging**

The principal purpose of packaging is to protect the product. Another purpose is to keep the produce in a sensibly sized unit for handling and marketing purposes. In addition, good packaging can contribute to the attractiveness of the produce and help to promote sales. Packaging can be very expensive and sometimes can be a very significant cost. In practice any recommendations on the introduction of new packaging material must carefully weigh the additional costs against the likely benefits.

While visiting wholesale markets it can be very instructive to examine the amount of damage caused in transport. Produce at the bottom of boxes should be looked at as well as the produce that has taken the full weight of the truck's load. Very often there is a conflict between the lorry driver's objective of transporting as much produce as possible and the problems of overloading and crushing the lower tiers of produce. Well-designed packaging needs to

maximize the use of space so it is normally oblong or square. To prevent tiers of boxes crushing the lowest produce the strongest points need to be the four corners of the box. The floor of the box acts mainly as a shelf. A certain amount of air movement needs to take place through the stacks of produce to prevent the build-up of heat and gasses. Sometimes, however, if produce is to be transported in very dry dusty conditions, excessive air ventilation can become a problem.

The strength of the packaging required will also depend on the physical attributes of the product being packed. For example, coconuts or cured potatoes or dry onions are much more resistant to crushing than tomatoes. The former can be packed in jute sacks and stacked on top of each other. You can imagine what would arrive at the other end if tomatoes were packed the same way.

The size of unit that the produce is packed in is determined first by the physical attributes of the product and then very often by how the produce is to be sold. Soft fruits like strawberries or raspberries will usually need to be packed in very small containers so they will retain their shape. Others such as sweet peppers or aubergines can be packed in larger ones. Major products are also normally packed in larger containers. Smaller volume commodities have to be packed in small units because the retailer would be reluctant to buy more produce than he thinks he can sell. If the product is being packed in retail packages then it must be in sizes that are convenient for the shopper. Shelf life will also have a bearing. A housewife can easily purchase ten kilos of potatoes without fear of any going bad before they can be used. On the other hand, it is highly unlikely that she would want ten kilos of tomatoes at the one time.

The end use of the product can also affect the packaging requirement. In the case of our soft fruits mentioned above if our strawberries were going to a processor to be used in jam manufacture they might be packed in large plastic drums with a preservative added. Produce for processing will generally not support high packaging costs.

## 6.0 Marketing Costs

### 6.1 Introduction

Agricultural commodity costs can be divided into two broad categories:

- Production cost
- Marketing costs

### 6.2 Production cost

Production costs will be made up typically of items such as land preparation, seeds, fertilisers, pest and disease control, financial and labour charges. Harvesting costs are usually also included in production costs but it is arguable that sometimes at least harvesting could be regarded as a marketing cost. Consider the scenario of a crop ready for harvesting. All the produce is to be sold and if it is not sold there is no alternative use for it. In such a situation harvesting should be regarded as a marketing cost. The farmer must decide on whether to market the produce. This decision will be based on whether the income received will at least cover the cost to be incurred from this point on. The cost of harvesting will be one of the costs which must be considered and therefore in this case is really a marketing cost.

### 6.3 Marketing Costs

Consumption of farm produce usually takes place away from the production area. We have said that for exchanges to take place some form of marketing activity is necessary. Part of these marketing activities will be the preparation and movement of the produce. There is usually a sequence of stages in this process. This sequence is usually referred to as the marketing chain. All these activities involve costs and the costs associated with them are referred to as *marketing costs*.

The length of the marketing chain and the amount of the costs involved are influenced by many factors. The consumer may be close to the producer, perhaps in the same village, or could be on the other side of the world. At the simplest level the cost involved may just be the time taken by a farmer to walk to a nearby market and stay there until all his or her vegetables are sold. At the most complex level a product may be stored for lengthy periods, transported

long distances and processed several times before reaching the form in which it is finally sold.

The prices of products in shops or retail markets are often much higher than the price paid to the producer. It might appear at first sight that the difference is indeed too great and that either the producer is not receiving a fair price or the consumer is being overcharged. This appears to be nowhere more true than in agriculture. Producers might decide that they will do the marketing themselves and earn extra cash for their effort. This indeed might be a viable option but in order to be able to make that judgement we should fully understand all the costs involved and be able to calculate them.

Some costs, such as transport, sacks or fuel for a rice mill are obvious and easily understood. Other costs can be less obvious because they are not visible, but they are nevertheless real and must be accounted for. Some market intermediaries do, of course, make very high profits but others do not. Profit margins may also, for very good reasons, vary across time. In such cases it is necessary to examine margins over a period. These market intermediaries are often referred to as middlemen. It must also be remembered that middlemen do perform a function and while we might be able to get rid of the middleman we can not get rid of their function. Somebody has to perform it and it will have costs. Clearly also, unless middlemen can make an overall profit they will not be able to continue in business, to the disadvantage of both consumers and farmers.

Generally, the more complex and lengthy the marketing chain the higher are the marketing costs. Thus simple comparison of farmer prices with retail prices is a poor indicator of marketing efficiency as it does not take into account the costs involved in moving produce along the marketing chain from farmer to consumer. If a farmer can sell directly to a consumer at or near the farm gate he will expect to receive a higher share of the final price than if the product is sold 500 km away, because of lower transport costs. The number of times the product changes hands is also likely to be higher the further it travels. Producers of very perishable crops are likely to receive a lower share of the final price than the producers of non-perishable crops because not all the perishable crops may be saleable by the time they reach the market. Thus, in comparing farmer and consumer prices, we need to be fully aware of all the costs involved. Only



then can we see if excessive profits are being made or if the high costs are justified.

At the end of our examination we may conclude that indeed the costs are justified and the various middlemen are not making excess profits. This of course is not the whole story. Alternative market channel design might be more efficient and enable a reduction in margins. This is a market management issue and should be dealt with at that level. As such we will not discuss it further here but we should be aware of it.

This Guide briefly explains the concept of marketing costs and their calculation and should be particularly useful to marketing officers and extension workers who are called upon to advise farmers on marketing during the course of their work. Sometimes, for example, it may be in the interests of farmers to work together as a group to jointly market their produce. However, before this is done, someone, such as the extension officer, needs to be able to help them to calculate the costs involved so that they can be sure they would be better off using a different marketing procedure.

Because marketing practices can vary from place to place and by type of produce it is not practical to cover all marketing costs for all crops in one short document. What we are concerned with here then is more the indication of where costs may arise and ways of calculating them.

Because of these differences in practice it is also impossible to provide a simple methodology for evaluating costs. For the same reason, it is clear that there is no such thing as a "reasonable" marketing cost for a crop which extension workers could use to compare with costs in their area. The costs of marketing a product depend on the circumstances in the country and in the area concerned so whether costs are reasonable or not must be calculated in each individual situation.

The first section summarises the main types of marketing costs associated with agricultural marketing and gives some indication of why they can vary so much. Subsequent sections consider each individual type of cost in more detail.

The Guide then discusses how to put together all of the individual costs in order to determine the total marketing costs involved in moving produce from the farmer to the consumer. A final chapter looks at marketing margins, how they are calculated and how to interpret them.

## 7.0 Summary of marketing costs

### 7.1 Marketing costs

Traditionally marketing costs are considered to start once the produce has reached the farm store or pack house or maybe even the farm gate. Marketing costs will generally include:

- Produce preparation and packaging costs
- Handling costs
- Transport costs
- Product losses
- Storage costs
- Processing costs
- Fees, commissions and unofficial payments
- Prices and margins

### 7.2 Produce preparation and packaging costs

When the product is harvested it must be prepared for market. Thus the first marketing cost incurred is *produce preparation*. This includes cleaning, sorting and grading. The second cost that is usually faced is *packaging*. Types of packaging used may range from a simple jute bag which may account for less than one percent of the marketing cost to sophisticated plastic packaging for direct shipment of fruits to consumers in supermarkets, which would account for much more.

### 7.3 Handling costs

At all stages in the marketing chain produce will have to be sorted, graded, packed and unpacked, loaded and unloaded, put into store and taken out again. Each *individual handling* cost will not amount to much but the sum total of all such handling costs can be significant.

### 7.4 Transport costs

Once packed, produce is then *transported*. In many countries the initial transportation may be done by the farmer or his labourer, carrying the produce themselves or using animals. Alternatively, traders may send agents around to farmers to collect produce for assembly in one central area. Costs will vary according to the distance between farmer and market. They will also depend on

the quality of the roads. A farmer living close to a main highway will face much lower transport costs than one living at the end of a rough road which causes much damage to trucks and is often impassable. The level of competition between transport operators will also influence transport costs as will the transport operators costs.

Sometimes *transport* costs are a simple matter to calculate because the farmer or trader pays a set price per kilogram to the transport operator. But what do we do when produce is carried on a "per container" basis or when farmers or traders hire a complete truck and transport a variety of crops? How do we calculate a trader's transport costs if he owns his own vehicle?

### **7.5 Product losses**

Losses are common with agricultural produce marketing. Losses may be quantitative, qualitative or both. Quantitative losses can be in the form of weight loss or product may have to be dumped. In the case of highly perishable produce such as many horticultural crops there can be a rapid loss of quality leading to price reductions. Thus one kilogram of a product sold at retail level cannot be compared with one kilogram sold by the farmer. Losses will probably be highest in the peak production season when "gluts" of produce mean that much has to be thrown away unsold. In general, the longer the distance between farmer and consumer the higher the likely loss.

The treatment of losses in marketing cost calculations can be fairly complex. In particular, produce which is bought but not sold can still incur costs such as packaging, transport and storage.

### **7.6 Storage costs**

*Storage* is an important cost for many products. The main purpose of storage is to take advantage of likely higher prices in the future compared to the price at harvest. The assumption behind all commercial storage is that the price will rise sufficiently while the product is in store to cover the costs of storage. Such costs will vary, depending on the costs of building and operating the store but also on the cost of capital used to purchase the produce which is stored. If a store is used to its maximum capacity throughout the year costs will obviously be much less than if it is only used for a few months and is, even then, kept half empty.

There may also be product losses in storage and product may need to be re-graded and repacked after storage.

## **7.7 Processing costs**

*Processing* is often an important marketing cost. Grains such as rice and maize have to be milled. In working out total marketing costs we need to consider the conversion factor from unmilled to milled grain, as well as the value of any by-products. The price paid to the farmer for one kilogram of paddy cannot be directly compared with the price paid by the consumer for one kilogram of milled rice because they are not the same product. It is surprising how often something as simple as this is overlooked. Similarly, a coffee farmer can't compare directly the export price for a kilogram of green beans with the price he receives for cherries.

Processing costs can vary according to the efficiency of the organisation doing the processing, the processing facility's throughput and the frequency of its operation. It will also vary according to the organisation's costs which can depend on factors such as fuel costs, depreciation costs, import duties, taxes and wages.

## **7.8 Capital costs**

*Capital* costs may not be very visible but are extremely important. To operate, a trader may have to borrow money from the bank. The interest he pays on that money is a cost. If a trader uses his own money we cannot then say that he has no costs since he could have left the money in the bank to earn interest instead of using it for trading. The cost of using his own funds is thus the interest he is not receiving. Economists call this an *opportunity* cost. Farmers also have capital costs. If a farmer stores his own product he is foregoing income for a period of time.

There are other opportunity costs. For example, a trader could perhaps be using his time to do other work. For him to want to be involved with marketing the *profit* he makes from marketing must be more than his alternative income opportunities. Often it must be significantly more, particularly when he runs the risk of losing money.

## **7.9 Fees, commissions and unofficial payments**

The costs considered above are the major costs which are faced in marketing agricultural produce. But there are many others and people involved with measuring costs need to keep all of them in mind. While they may be low in one country they may make up a sizeable proportion of costs in another. People using markets have to pay *market fees*. Often they will have to pay to have their produce *weighed*. Traders normally have to be licensed and pay licence fees. In some markets wholesalers charge *commissions*. Taxes have to be paid and, sometimes, bribes are needed whether at road blocks when transporting produce or to get permission to operate a business. All these costs have to be built into the calculations.

## **7.10 Prices and margins**

Finally, costs have to be related to prices received. In a retail market in the morning tomatoes may be selling at a high price which appears to give the trader an excellent profit. By the evening, however, the trader may be selling them at a far lower price as he knows that the next day a supply of fresh tomatoes will be arriving. This must be kept in mind when comparing the selling price with the amount paid to the farmer.

## **7.11 Risk**

As it is extremely difficult to quantify risk and almost impossible to put a value on it we will not attempt it here. But the reader should be aware that risk will have a bearing on the margins which are expected from undertaking a transaction. Intuitively we know and experience tells us that riskier investments require higher returns to compensate for the greater chance of things going wrong. If we go to a horse race or a cock fight and we want to place a bet against the favourite we want higher odds to compensate us for the greater chance of our horse been beaten. Similarly with agricultural produce and particularly with the more perishable products traders will require higher margins in order to protect themselves against the higher risk of produce becoming unsaleable. Indeed farmers themselves expect higher profits from riskier crops to compensate for the times when something may go wrong. So while we may not quantify the cost of risk we must accept that traders will require higher margins in order to take on the risk. Therefore risk can be regarded as a marketing cost.

The price paid by the eventual consumer is thus made up of the amount of money paid to the farmer for his produce plus all of the costs involved in getting it to the consumer plus the profit taken at the various links. The percentage share of the final price which is taken up by the marketing function is known as the *marketing margin*.

Sometimes the marketing margin can be quite a high percentage and this may be used to argue that farmers or consumers are being exploited. Sometimes high margins can often be fully justified by the costs involved. Without an understanding of those costs and how they are made up it is impossible to know whether margins are reasonable or not. The degree of risk will usually influence the returns expected. High risk investments usually demand higher returns. The relative strength of the various participants can also influence the relative distribution of the marketing margin.

## **8.0 Produce preparation and packaging costs**

### **8.1 Produce preparation costs**

Preparation of produce for the market can often be time consuming. However, money spent at an early stage on preparation and packaging should be more than repaid by higher prices and lower losses. Higher costs can be expected to result in higher returns. Preparation activities should be seen as value adding activities. The more of these activities that can be done on the farm, the higher the value of the product as it leaves the farm and one would expect the higher the farm gate price. Typical produce preparation costs are:

- cleaning, such as removing soil and foreign matter
- trimming, to remove unwanted leaves, stems or roots
- sorting, to remove rejects and non-marketable produce
- curing, for example as with onions, garlic or potatoes
- grading, to separate produce into similar sizes and qualities before packaging, thus increasing the market value of the produce
- hot water treatment of mango to control post harvest disease
- waxing and wrapping, for example we see apples for sale here wrapped in polystyrene and cling film to protect them from bruising

The increased value of the produce after preparation should compensate for the extra cost and work involved. In some cases of course product may be virtually totally unmarketable if there is not some preparation done.

### **8.2 Packaging costs**

Most produce needs packaging. Exceptions are generally larger fruits and vegetables such as pumpkins and water melons which may be transported in bulk. Leafy vegetables, such as cabbages, are also often transported in bulk. Here the outer leaves themselves act as a form of packaging by protecting the inner leaves. There is no packaging cost but it should be remembered that the outer leaves are often thrown away before sale and thus there is a cost in terms of product loss.

Packaging serves three basic purposes:



**convenience:** it provides a convenient way of handling and transporting produce. Costs would certainly be much higher if everything had to be carried and moved without any form of packaging. Imagine transporting rice and corn without putting it in some form of container

**protection:** it provides protection for the produce. The efforts which are continually being made to improve bulk packaging are designed mainly to improve the protection offered rather than to increase the convenience of the packaging from a handling point of view

**promotion:** packaging can be used to divide the produce into convenient units for retail sale and to make the produce more attractive to the consumer, thus increasing the price at which it can be sold. The more sophisticated the packaging, the greater the cost.

For some products such as maize or paddy the farmer will pack the product in jute or other sacks which might be used right through the marketing chain. A fruit or vegetable may be packed and repacked several times on its way between producer and consumer, depending on the length of the marketing chain and its eventual use. The farmer may use one type of packaging (for example a sack) to take his produce to market. At the market a trader may transfer the produce to a wooden box or plastic crate for transport to the wholesale market. A retailer buying at the wholesale market may then transfer the produce to his own packaging and then repack it (for example in plastic bags) for convenient sale at his shop. All of these various types of packaging involve costs, and need to be taken into account when working out total marketing costs.

The simplest packaging cost to calculate is when the bag, box, crate or basket is used only once. All you then need to know is how much produce the package contains in order to work out the packaging cost per kilogram. Often, however, things are not that simple.

With the use of more sophisticated bulk packaging, every effort is made to use the packages over and over again. In these circumstances you need to make an estimate of how many times the container is used to arrive at a cost per journey. Allowance must also be made for repairs and for the cost of transporting the empty package back to the beginning of the marketing chain. If a trader owns his own vehicle and all his business is in one direction (that is from farms to town) then his cost of returning the containers is negligible. If, however, he has

to pay transport costs for the empty containers this can increase his packaging costs significantly.

At the retail level it may no longer be practical to try and attribute individual packaging costs. These would then be included in general overheads.

The type of packaging used in a particular country and for a particular marketing chain will depend on the costs and benefits of using it. Thus, plastic crates are likely to be used more for produce marketing in a country where they are manufactured than in a country where a 100 percent import duty is charged on such crates. Sophisticated packaging will be used more when it significantly reduce losses; non-perishable produce will not require expensive packaging because the benefits of using it will be marginal. The higher the value of a product, obviously the better it can support higher packaging costs.

Opportunities for the manufacture of packaging using locally available material should always be explored actively. The production of raw materials and the manufacture of the packaging is an example of how local enterprises can be developed to service the agricultural sector.

### **8.3 Handling costs**

It is very easy to overlook handling costs. Each individual time a product is handled the cost per kilogram will be negligible. But a product can be handled many times before it reaches the consumer. The total of all these small handling costs can end up being quite considerable and for products with a relatively low value to volume ratio can be a significant proportion of the product price.

In some cases it is possible to get an accurate idea of handling costs. For example, porters at wholesale markets usually charge a fixed rate per box or per cart. In other cases, however, there will not be a fixed charge. Costs per container will then need to be worked out approximately by dividing the wage of the employee by the number of packages handled. Where casual employees are recruited on an hourly basis (for example at a market) this might be fairly easy. Where the person is a full-time employee of the trader the calculation is more difficult. The employee may spend many hours sitting on a truck travelling between the farmer and the market. He will be doing nothing during

this time but the trader will still have to pay him if he wants his assistance to load and unload.

It would not be uncommon for to have the following individual handlings:

- farmer or labourer loads produce on to ox- cart;
- product is loaded onto a jeepney
- product is unloaded at municipal traders bodega
- municipal trader transfers product to wholesaler
- wholesaler or his employee repackages the produce in wholesaler's containers;
- produce is carried to and loaded on wholesaler's truck;
- produce is unloaded at wholesale market and taken to premises occupied by wholesaler or his agent, unpacked and sorted or graded and weighed;
- produce is repacked in retailer's containers;
- produce is carried to retailer's transport;
- produce is unloaded at retailer's store;
- produce is repackaged into plastic bags.

#### **8.4 Transport costs**

Transport costs are incurred by farmers when they take their produce to the market and by traders as they move the produce down the marketing chain to the consumer. Sometimes transport costs are very obvious because they involve the direct payment by a farmer or trader to a truck owner or, in some cases, boat owner on a per piece basis. In other cases such costs are less direct, for example when the trader, or even the farmer, owns and operates his own vehicle.

In other situations there is no financial outlay but there is still an opportunity cost. For example, when a farmer uses animal transport, a bicycle or even carries the produce himself to get to an assembly market he could be doing other things with his time. This is a relevant marketing cost if the farmer has the possibility of selling his produce at the farm gate but feels his income will be higher if he takes it to the market. However, if the farmer has no alternative to going to the market then the time spent can be more properly regarded as part of his costs of production. If he doesn't go to the market he will not be able to sell his produce.

Payment to truck drivers to carry produce to market on a "per piece" basis makes for easy marketing cost calculations but is usually a more expensive way of transporting produce. Truckers have no idea whether they will fill their trucks or not and so calculate their charges "per piece" by assuming an average load over the season or year which is less than the capacity of the vehicle. Thus traders or farmers working in groups can, if they are sure they can fill a vehicle, save on transport costs by joining together to hire one. Generally, the larger the truck they can hire and fill, the cheaper the per unit transport costs. Extension officers involved with marketing can play an important role by helping farmers or traders to organise to do this. Accurate information on quantities to be transported will enable the most suitable size of truck to be hired.

When produce is carried on a "per piece" basis it is a simple matter to divide the cost per container by the number of kilograms in the container. When a truck is hired or the trader uses his own, the calculation is more difficult because the vehicle may be used for several different commodities, each packed in a different sized container. For most trucks the factor limiting quantities carried is space available, not weight. Thus products which have a low weight-for-volume ratio should be costed at a higher per kilogram cost than produce which is heavier in relation to its volume. This requires making a rough estimate of the volume of the containers used for each commodity. The space available in the truck (minus an allowance for space that cannot be filled because of the shape of the containers, etc) can then be divided by the volume of the container, so allowing the cost per kilogram to be worked out.

The calculation becomes more complicated when a trader owns his or her own vehicle and we have to assess his or her transport costs. There are so many factors to consider in working out the costs per kilogram for one journey that this is best avoided unless there is no alternative information available to allow the cost to be estimated. For example, if some traders use their own transport while others hire trucks on a "per journey" or "per piece" basis then you can use the costs of the latter as a "best guess" of the costs to a truck-owning trader.

Because traders and truck owners are often accused of overcharging it is important to be aware of the transport costs they face. These include:

- cost of acquiring the truck and servicing the loan
- wages paid to the driver and, where relevant, his assistant
- cost of fuel, maintenance, repairs and the like

- cost of licences, road tax, insurance and other necessary payments
- costs incurred *en route* such as tolls or bribes paid at official or unofficial road blocks and charges for entering a market
- truck owner's margin

An estimate should be made of the total distance the truck will travel in a year. Overheads should be divided by kilometres to arrive at a cost per Km. Operating costs per km should then be calculated. Having identified annual transport costs it is then necessary to consider the amount of work the truck will do in one year in order to work out a cost per tonne per km. This will depend on:

- the periods in which produce is available to be marketed;
- the other uses (if any) to which the truck can be put-on return journeys or when not being used for agricultural marketing;
- the days the truck is unavailable due to breakdowns, repairs, services and the like;
- when both produce and the truck are available, the number of journeys and kilometres the truck will be able to do.

**For most cases it is easiest and best to take contract hire charges and to use these for calculations.** There are a number of reasons for this;

- it is usually a readily available figure and is realistic
- it saves the extension officer a lot of work and information gathering
- if a farmer or trader operates a truck he should get some return for the truck operation and this is reflected in hire charges

#### **8.4.1 Example of a calculation of transport costs**

Assume that there are 20 m<sup>3</sup> of space available in the truck to be used and that it costs P5,000 to hire the truck. A container of 0.2 m<sup>3</sup> holds 8 kg of tomatoes and a container of 0.4 m<sup>3</sup> holds 10 kg of green peppers.

Then the transport cost for **tomatoes** per container and per kilogram is

$$P5,000 \div (20 \text{ m}^3 \div 0.2 \text{ m}^3) = P 50 \text{ per container}$$

and

$$P25 \div 8\text{kg} = P6.25 \text{ per kilogram}$$

While the transport cost for **green peppers** per container and per kilogram is ...

$$P5,000 \div (20 \text{ m}^3 \div 0.4 \text{ m}^3) = P100 \text{ per container}$$

and

$$P100 \div 10 \text{ kg} = P10.00 \text{ per kilogram}$$

As can be seen, there are numerous individual costs which can combine to make produce transport extremely expensive. In many cases transport will be the most important marketing cost. It is therefore vital that the cost is calculated correctly. Expensive mistakes can be made if, for example, a village co-operative decides to buy a truck to compete with traders. If it underestimates the costs of operating the truck or overestimates the amount of produce it will handle it could end up with a large loss. While it might sometimes appear to be relatively expensive to hire transport it may in fact be by far the cheapest option. There are many costs to be considered when deciding to buy a vehicle not least of which are the capital costs and these are often underestimated. One other cost in operating transport is the cost of management. Staff must be supervised, the truck must be maintained, fuel usage must be monitored as indeed must the use of the truck. All this takes time and some expense for travelling etc. and this should be considered when making decisions about whether to buy or hire.

**If the farmer or the co-op does not have the capacity to manage the transport properly, then the decision is easy. Buying is totally out of the question.**

## 8.5 Storage costs

Most produce undergoes some form of storage. Different participants in the marketing chain may have different reasons for storing produce. There may even be different reasons for storing different product classes and of course the difficulty of storage will vary among different product classes.

Farmers generally will be interested in storing product in anticipation of higher prices in the future. Governments will be interested in storing produce, particularly staples, in order to ensure food supplies for the population throughout the year. Processors will store product in order to spread out their workload and extend the use of their plant. Often, of course, the market will just not physically absorb all of the product at the one time, so if it all is to be sold some of it must be stored. Very perishable crops may need some form of storage just to get them to market. Storage can be carried out by the farmer, the trader (or marketing board) or by the consumer.

With regard to perishable crops, storage can be used to extend what is often every short period of availability. However, this is only viable when the produce can be sold after storage at a price higher than the into-store price, with the difference fully covering the costs of storage, as well as offering an incentive to take the risk that a loss may result.

Storage costs fall into five categories:

- **Capital costs** - these are costs associated with the building of the store and purchasing equipment
- **Overhead costs** - Such costs are made up of factors such as interest on the debt, labour, security costs, electricity and other utility costs and maintenance
- **Operating costs** - these are costs associated with the physical operation of the stores, that is the actual cost per kilogram which must be paid to place the produce in the warehouse or cool store and keeping it there
- **Materials costs** - costs associated with the maintenance of the product quality while it is in store, for example, the cost of chemicals;
- **storage costs** - costs associated with loss of quality and quantity while the produce is in store

- **financial cost** - interest payment on money used to purchase product or the opportunity cost of that money to the owner of the produce while it is in store.

Capital and overhead costs are often a very significant item in storage costs. In many such cases the biggest single factor affecting storage costs is capacity utilisation. Where a store is used frequently to full capacity costs per unit will be much lower than if capacity utilisation is low. This is also a very important consideration in deciding whether to build in the first place. Remember that capital and overhead costs are there whether the store is used or not and they are spread out over the quantity of product stored. The larger the quantity stored the lower the per kilo cost. An old adage but still a very true one is that ***it is very difficult to make money out of concrete.***

Where storage facilities are rented on a kilogram or cubic meter basis it is relatively simple to work out physical storage costs incurred. The cost per kilogram for the period the produce is in store can then be worked out. Where an entire warehouse is rented the calculations get a little more complicated. We then need to have an idea of the average number of containers/kilograms in store during the period for which the store is hired. An example of this calculation is shown below.

### **8.5.1 Calculating storage costs**

Assume that a warehouse is hired for 120 days of the year at a total cost of P10,000 and that the weighted average contents are 250 bags of onions.

Then the storage cost is:

$$P10,000 \div 120 \text{ days} = P83.33 \text{ per day}$$

$$P83.33 \div 250 \text{ bags} = P0.33 \text{ per bag/day}$$

There will usually be quantity losses while produce is in store. This may be deliberate (for example, when grain is dried so that it will store better) or accidental, due to bad storage. With fresh produce some quantity loss is almost inevitable, however efficiently it is stored. Physical losses in storage need to be treated as costs in the way outlined in the section on product losses. Quality losses are also inevitable and for the trader these are reflected in the prices he or she receives. As shown above it is important to get an accurate estimate of the weighted average price stored produce is eventually sold at.



It is easy to ignore the fact that produce while in store incurs a financial cost for the farmer, the cooperative or the trader. To do so, however, would give a totally inaccurate impression of marketing costs. An example of a realistic calculation of storage costs including additional costs such as bank interest is shown below. This example assumes that there is a product loss of 15%.

### 8.5.2 Calculating storage costs over time

Assume that a trader buys onions at P400 per bag and keeps them in store for 4 months. To do this he has to borrow money at 12 percent per year.

Then the cost of bank interest is ...

$P400 \times 0.04$  (12% p.a. over 4 months) = P16 per bag

Thus a realistic calculation of storage costs per bag for our consignment of onions is

Storage charge for 120 days at P0.40 per day = P48

Interest charge of P16 per bag = P16

Product losses (assume 15%) = P60

Sorting and repacking = P10

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Total cost per bag = P134

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So, if the producer is doing the storage he must receive (P400 + P134) P534 to cover costs. One would also expect some margin to compensate for the extra management involved and for the risk. Perhaps a price out of store of P600 might be considered necessary before the operation would be considered worthwhile.

## **8.6 Product losses**

### **8.6.1 Quantity losses**

If a farmer produces one hundred kilograms of a product how many of those kilograms will end up going out the retailers door in a customers shopping bag and what will be the average selling price? Post-harvest losses of produce, particularly fresh produce, can be quite considerable. One of the biggest causes is often the fact that the farmer produces more than the market can absorb and it either remains unsold on the farm or in the market place and is dumped. When there is a surplus, physical losses will be high and/or farmers and traders will have to sell at a loss for the market to clear. Losses can also arise because farmers do not know how to market their produce or because of poor infrastructure they can not get their produce to market. In many parts of the world losses arise as a result of pest damage while the product is in storage.

Poor harvesting techniques and bad handling on the farm (bruising, exposure to the sun) or even harvesting at the incorrect stage of maturity can mean that much damage has been done even before the produce is sold to the trader. Sometimes damage will be already done but may not become obvious until much later. A good example of this is mangoes infected with anthracnose. Infection occurs on the tree but does not show up until after the fruit is picked and the colour has changed. This is also a good example of how risk can affect the price offered to farmers. Suppose a mango trader buys mangoes that appear perfectly good but when they start to ripen a big percentage is infected with anthracnose. The trader may now reduce the price he offers in future because of the risk that a high percentage of the fruit he is buying will also be infected.

Poor handling by the trader and his employees can make the situation worse. Overfilling of containers, poor stacking, overloading of trucks, exposure to sun on top of a jeepney, high temperatures inside a truck or other vehicle (if a truck breaks down and has to sit at the side of the road for two or three days the entire consignment could be lost) can all contribute to losses. Delays and bad handling at the wholesale market can make things worse. Sometimes, for example, produce which has been well packed by the farmer or the trader is simply thrown onto a heap on the floor of the wholesaler's premises, causing further bruising and damage.

At all stages of the marketing chain some produce will be thrown away. This may be planned, as in the case of cabbage leaves, but in most cases it will be the result of losses caused by bad handling. Sorting should occur at all stages of the marketing chain to separate damaged from good produce.

Losses in weight can occur even if produce is not thrown away. Most crops lose weight during transit and storage as the result of moisture loss. This is not necessarily a bad thing. For example, grain stores better when dry. But it does mean that a kilogram of produce purchased from a farmer is not equal to a kilogram sold to a consumer by the trader. Some produce prices are based on a fixed moisture content with a fixed variance for moisture levels above or below the standard. Others may have a standard deduction which will sometimes favour the trader and sometimes the farmer but over the long term the farmer rarely wins.

Quality can also influence the level of losses. In times of scarcity poor quality produce may find a ready market, while at peak season it might have to be dumped. The actual market location and type of customer (market segment) can also be a factor. Different markets have different quality standards.

The best way to treat losses is one that enables you to compare the quantity eventually sold with the quantity bought from the farmer. When calculating losses and margins we must be careful to include all marketing costs incurred, not only the costs incurred on product sold but on product not sold. It gives the most accurate calculation and also a more accurate picture of traders margins.

### **8.6.2 Calculation of product losses**

Suppose a farmer sells 1kg of produce to a trader at P10 per kg. The product is transported to market and eventually sold. Total marketing costs are P2 and 0.9kgs are sold at an average price of P16 per kg.

### **Purchases**

1kg @ P10 per kg	= P10-00
Marketing costs	= P 2-00
Cost per kg	= P 12-00

### **Sales**

0.9 kg @ P16 per kg	= P14-40
Profit	= P 2-40

*Profit per kg* = P 2-40

Frequently the calculation is done differently and incorrectly

### **Purchases**

1kg @ P10 per kg	= P10-00
marketing costs	= P 2-00
Total	= P12-00
Cost per kg	= P 12-00

### **Sales**

1 kg @ P16 per kg	= P16-00
less 10% loss	= P 1-00
Profit per kg	= P 3-00

**This latter method is clearly incorrect and gives a misleading picture**

### **8.6.3 Quality losses**

There are quality as well as quantity losses. Quality losses reveal themselves when the trader has to sell part of a consignment at a lower price than the rest. This could be because some produce is damaged in transit, because produce deteriorates over the period it is being sold or because the trader expects that it will deteriorate before he has another opportunity to sell it. In many countries perishable fruits and vegetables are sold at low prices on Saturday evenings because markets are closed on Sundays. In many European countries fresh produce must have a *sell by* date and even if the produce is still in perfectly good condition when that date arrives it must be withdrawn from sale at the end of business on that day. Such produce may be also be sold off cheaply to clear the shelves and avoid having to dump it.

In estimating the price the trader receives for produce he or she has probably purchased from the farmer at a fixed price per kilogram, you must therefore take account of the fact that all of the consignment is unlikely to be sold at one price. Not only will there be price variations due to quality differences but prices will vary according to supply and demand in the market. To calculate the average price the trader receives you must therefore calculate a weighted average price. In wet markets the price may vary during the day as traders endeavour to clear their stalls before fresh supplies arrive.

An example of this calculation is shown below.

### **8.7 Calculating weighted average selling price**

Assume an example involving a consignment of 100 kg of fruit

50 kg sold at P30.00 = P1,500

20 kg sold at P25.00 = P 500

20 kg sold at P20.00 = P 400

9 kg sold at P10.00 = P 90

(1 kg is lost through weighing errors)

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Total Revenue = P2,490

Then the average selling price per kilogram is P24.90 per kg

If we arrived in the morning we might report the price was P30-00 and do our calculations of traders margins accordingly.

## 8.8 Processing costs

Processing is the transformation of a product from one form to another and to achieve this will clearly involve costs. There are the costs associated with the physical operation of the plant. In addition there are two other major considerations.

A major factor influencing the economics of processing is product recovery. If we think of some product we are going to process, say pineapples, it is obvious that the 1kg of pineapple purchased from the grower will not all end up in the can. First the pineapple must be peeled and then the hard centre must be removed. While we are doing this some juice may also be lost. We need to calculate therefore what all these losses are before we can start to compare the purchase price per kg and the selling price per kg.

On the other hand, there may be a by-product as a result of the processing and this by-product can often be used or sold. Think this time of a product like sugar cane. The primary product from the processing of sugar cane is of course sugar. All sugar however can not be crystallised. There are also various impurities contained in the raw juice. These together with the uncrystallised sugar end up as molasses. This molasses is also sold and the value of it must therefore be included in the calculations. Another by-product is bagasse. This is what remains after the cane has been shredded and the juice extracted. This is used to fire the boilers of the refinery and as such also has a value equivalent to the bought in fuel saved. Any surplus may also be sold for fibreboard manufacture.

The cost of the food in very sophisticated processed food products sold in supermarkets (for example "ready-to-eat" meals) can be a very small proportion of the retail selling price, sometimes less than ten percent. Processing, packaging and other marketing costs absorb the rest. However, in this Guide we shall concentrate on the cost of primary processing.

Some examples of primary processing are:

- paddy into milled rice (conversion at 65-70 percent, by-product bran)
- maize into maize meal (conversion at 65-85 percent depending on quality of meal, by-product bran)
- green tea into black tea (conversion rate 28-32 percent, no by-product)

- cotton into lint (conversion rate 30-35 percent, by-product cotton seed)
- cherry coffee into green bean (conversion rate approximately 18 percent, no by-product)
- copra into coconut oil (conversion rate 60-65 percent, by-product copra cake)
- soya beans into oil (conversion rate around 18 percent, by-product soya meal)
- oil palm into palm oil (conversion rate 18-24 percent, by-products palm kernels and oil palm cake. Kernels used to produce oil of palm kernel).

In calculating processing costs we need to know the conversion rate, the quantity of by-product, the value of that by-product and the costs of processing. An example of this calculation is shown below.

The conversion rate or recovery is a critical element in the viability of processing.

### 8.8.1 Calculating processing costs

Assume that a rice milling operation converts paddy at the rate of 70 percent (0.7) and has saleable by-products equal to 25 percent of the paddy weight. Processing costs per kilogram of paddy have been calculated at P1.50 (includes moisture loss and milling costs) per kilogram on the basis of the mill's total annual costs divided by the number of kilograms of paddy processed. The buying price of the paddy was P7.0 per kilogram and the by-products have a value of P2.50 per kilogram.

Then the processing cost per kilogram of paddy is .

One kilogram of paddy purchased	= P7.0
Processing costs or 1 kg x P1.50	= 1.50
Total Costs	= P8.50
Less the by-product revenue of 1 kg x 0.25 x P2.50	= 0.625
Break even selling price per kilogram of paddy	= P7.875

Break even selling price per kg of milled rice is  $P7.875 \div 0.7 = P11.25$

Of course, it will not always be possible to obtain reliable information on a miller's costs. These will include not only operating costs such as fuel, maintenance and repair but also labour costs, the cost of the capital investment in the mill and its premises, and the opportunity cost of the owner's time. Calculating total costs from all these individual costs cannot be realistically done by an extension worker. However, he or she can perhaps get information about milling costs.

Ministries of Agriculture may have model budgets for mills, according to their size, as may banks which lend money to mill owners. These can be modified according to circumstances and throughput of the particular mill.



## 8.9 Capital costs

We have already said that capital costs are a major component of marketing costs. Such costs will vary from country to country depending on the level of interest rates and the source of credit.

They include:

- the cost of money needed to buy produce and keep it in store or the opportunity foregone by not selling the produce and using the money for another purpose. Many small traders buy produce, sell it and use the proceeds to buy more. If turnover is rapid their needs for operating capital are limited. Traders who buy produce and store it for lengthy periods will, on the other hand, have sizeable operating capital requirements. If traders buy from farmers in advance of the harvest, that is they buy the "field" or the "tree" they will have to finance the produce they buy for even longer periods and their marketing costs will, consequently, be higher
- the capital cost of a warehouse or a truck if the trader owns them
- the capital cost of other buildings or of equipment, such as office space, weighing scales, grain drying equipment
- the depreciation (or loss of value) of the vehicle, warehouse or equipment owned by the trader, miller, or others.

The calculation of capital costs for a small consignment of produce is far too complex an operation when the aim of the exercise is simply to work out marketing costs of vegetables from a group of farmers to a nearby urban market. In these cases it is best to use commercial rates for the hire of services, such as transport rates, storage rates or contract milling charges, even if the trader is using his own vehicle or other facilities. These commercial rates will already have capital costs built in by the trucker, warehouse owner, or others.

However, extension workers may be asked to advise a cooperative or even an individual farmer or other individual on whether to build a store, construct a maize mill or purchase a truck. Under these circumstances it is necessary to compare the capital and depreciation costs with the expected annual return from the activities after the direct operating costs have been covered. Capital costs are the interest paid to the bank on the loan. Assuming interest rates stay

constant, this interest can be estimated in advance on a yearly basis if you know how much of the "principal" (that is, the total amount borrowed) is paid back every year.

Depreciation is usually calculated on a "straight line" basis. Here, the life of the vehicle or building is estimated and its cost, minus its "salvage" or "scrap" value at the end of its working life, is divided by the number of years of its life to get the annual depreciation. This is known as *historic cost accounting*.

Very often however the replacement cost of a vehicle bears little relationship to the original purchase price. This is especially true during periods of high inflation or major currency realignments.

A more accurate way of calculating depreciation is to use *current cost accounting*. Here the replacement value is used to calculate the annual depreciation. This gives the owner a better indication of the margins needed to cover overhead costs and a more accurate reflection of profitability. Although this is the best approach it must be said that even very few large corporations use this method never mind small farmers or traders.

## **8.10 A marketing cost calculation**

Once all the costs have been calculated it is then necessary to put them together to work out total marketing costs. The calculation will vary according to the complexity of the marketing channel, whether there is processing or not, and how many intermediaries there are.

Often however we will not need to calculate the costs for the entire chain. The decision facing the manager may be whether to sell directly to the municipal trader rather than to an itinerant trader who buys at the farm gate. In this case the relevant costs are those which will be incurred between the farm and the municipal poblacion.

There are many costs which can not be attributed directly to individual commodities. This is particularly true for traders who handle many products and for retailers who may sell hundreds or thousands of different products. One Wall Mart store in America carries 80,000 different products. The gross profit of the wholesaler and retailer has to cover all costs which cannot be calculated on a per kilogram basis. These occur over a year and can only be apportioned with great difficulty to individual commodities. Operating capital and licence fees would be incurred by the wholesaler, while, among other things, the retailer would have the expenses associated with renting and running his shop. Thus the net profit made by both would be much less.

Below is an example of a marketing cost calculation. It is assumed here that the farmer brings his produce to the roadside and a trader comes along and buys it and collects it there. The example given here is concerned with the marketing costs from the roadside on. The farmer will, of course, have already incurred some marketing costs and will have had to calculate whether the price he receives will compensate him for harvesting his crop.

Apart from calculating the the The farmer may also decide to

### **8.10.1 A cost calculation**

Assume that farmers growing tomatoes wait at the side of the road for traders to come and buy from them. They carry the tomatoes to the road in baskets and sell to traders at P5.00 per kilogram. Traders repackage the tomatoes in reusable

wooden boxes containing 10 kg. The traders then take the tomatoes to a wholesale market where they are bought by retailers at an average price of P9 per kg. These retailers supply their own boxes to transport the tomatoes to their shop or stall and sell tomatoes to consumers in plastic bags each containing 500 grams. Losses are considerable. While with the traders they amount to 10 percent so they sell only 0.9 kg of every kilogram purchased. The retailers lose a further 10 percent of what they purchase so they sell 0.81 kg of every kilogram purchased by the trader from the farmer. The average retail selling price is P11.70 per kg.

	<b>Per kg purchased from farmer (Pesos)</b>
Purchase of tomatoes from farmers (1kg x \$0.50)	<b>5.00</b>
Packaging (P5.00 ÷ 10 kg box)	0.50
Labour employed by wholesaler to pack, load and unload	0.20
Transport to wholesale market (P15.0 per box ÷ 10 kg)	1.50
Costs en route such as road blocks	0.10
Market fees	0.10
Market agent's fees	0.20
Total costs	<b>7.60</b>
Quantity sold (0.9 kg x weighted average selling price of P9.0 per kg)	<b>8.10</b>
Trader's gross profit	0.50
Retailer's buying price (\$0.90 x 0.9 kg)	<b>8.10</b>
Market fees	0.10
Packaging from market to shop	0.20
Porter's fees in market	0.10
Transport to shop (0.9 kg x \$0.50 per 10 kg box)	0.40
Weighing, cost of plastic bags, and retail packaging (for 0.81 kg)	0.20
Total costs for retailer	<b>9.10</b>
Revenue from sale of 0.81 kg (0.9 kg x 0.9) at a weighted average selling price of P11.70 per kg	<b>9.50</b>
Retailer's gross profit per kg	<b>0.40</b>

## 8.11 Marketing margins

A marketing margin is the percentage of the final weighted average selling price taken by each stage of the marketing chain. The margin must cover the costs involved in transferring produce from one stage to the next and provide a reasonable return to those doing the marketing. An example of a margin calculation is shown below.

### 8.11.1 Calculating market margins

These calculations are based on figures given in the previous chapter, that is where the buying price from the farmer is P5 per kg, the weighted average wholesale selling price is P9 per kg and the weighted average retail price is P11.70 per kg

Share to the producer  $P5 \div P11.70$  = 0.427 or 43%

Wholesale margin  $(P9 - P5) \div P11.70$  = 0.342 or 34%

Retail margin  $(P11.7 - P9) \div P11.70$  = 0.230 or 23%

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Total margin = 0.572 or 57%

### 8.11.2 Analysing marketing margins

Looking at margins and changes in margins cannot tell you that there is a problem. It can only suggest that there may be a problem which requires further investigation by studying the marketing costs.

When margins are being compared we should also be sure that we are comparing like with like. Sometimes state marketing boards are compared with private enterprises and the private marketing channels are seen to have higher margins. The reason for this difference may be that the state boards were being subsidised and indeed if these subsidies were taken into consideration the private channels may be more efficient. This is an issue, though, more for national planners than for extension officers but they should be still aware of it.

Comparing current margins with historical ones can also be misleading. Interest rates, construction costs, labour costs or many other factors may have changed.

"Margins" are often used in the analysis of the efficiency of marketing systems. Often they are misused even if they are correctly calculated. The presentation of

a trader's share of the final selling price in percentage terms can give a totally misleading impression unless you know the costs involved. Often people who research marketing costs and margins start out with the assumption that traders exploit farmers. When they look at the margins they may think they have found the proof.

A marketing margin of 57% may appear excessive and extremely hard to justify. When we examine them in more detail it can be seen that while the margins are high the profit margins are quite modest. It is important to distinguish between marketing margin and profit margin. These profit margins are also gross profit margins. A retailer will have overhead costs such as building rental, electricity, staff, security etc. which must be covered from this gross margin in order to arrive at net profit.

**A fall in prices will usually lead to an increase in margins.** While this might appear to be unfair or even wrong it can be easily explained. When changes in prices and margins are expressed in percentages the situation can appear to be even worse. And because a "reasonable" marketing margin may have been estimated at some time there is a tendency not to accept that such margins can and must change. For example, suppose the price of some commodity is P20,000 per ton. Further, suppose the farm gate price then is P10,000 per ton. The marketing margin then is 50%. If the price of the commodity decreases by 20% or P4,000 per ton the new market price will be P16,000 per ton. If marketing costs do not decrease in line with the market price then the new farm gate price will be P6,000 per ton or a decrease of 40% and the marketing margin will increase to 62.5%. traders profits will not have increased even though the marketing margin will have increased substantially, but the marketing cost will not have changed at all.

Increases in marketing margins due to increases in marketing costs may not mean increases in profits made by those doing the marketing. Moreover, where farmers receive only a comparatively small share of the selling price this does not necessarily mean that they are being exploited. Total margins will depend on the length of the marketing chain and the extent to which the product is stored or processed. To know whether margins are reasonable you need to understand the costs.

### **8.11.3 Conclusion**

Finally although we mentioned risk at the beginning of this guide it has not been given a separate chapter. We have however referred to risk on a number of occasions throughout the text. I hope that this will give some understanding of how risk can affect prices and hence marketing costs. Anything that can be done to reduce risk should lead to an increase in price. We will return briefly to the example of the post harvest losses of mangoes. If traders could be sure that the fruit they were buying was not going to deteriorate and lose value quickly they should be prepared to pay a higher price. Similarly, good planning to even out gluts and production troughs should also reduce risk and while it may reduce prices in what were formerly periods of scarcity this should be more than compensated for by higher prices and a reduced risk of having to dump product because the market does not clear.

I hope that this guide has also brought a better understanding of marketing costs and what they are. The extension officers role is not really to do these calculations for the producers. Their role is to explain to them and guide them in the calculations. The section in the previous chapter on the analysis of marketing margins is an area that extension workers should try to become expert at. Figures on their own are valueless. It is how we use them that counts. Careful analysis can ring alarm bells and can often highlight opportunities.

The last point to be made is that often when marketing margins are being analysed, analysts regard the marketing channels as being efficient if none of the channel members are making above normal profits. This is a definition of economic efficiency but economic efficiency is sometimes a poor measure of the real efficiency of an operation. If the marketing channel contains more intermediaries than is necessary this will usually mean that the produce has to be handled more frequently and more people have to get a share of the final selling price. If the number of intermediaries could be reduced, say, from six to four marketing costs might be reduced from P3,000 per ton to P2,600 per ton. In terms of economic efficiency both channels might be equally efficient or the one with the six intermediaries might be more efficient. Clearly though in terms of increased price to the producer or reduced prices to the consumer the four member channel is more efficient. In addition the reduced number of times the

product must be handled should reduce the risk of damage and get product to market faster and fresher with the possibility of getting even a higher price.



## **9.0 The basic preparatory work**

### **9.1 Introduction**

We have so far examined various aspects of marketing including market identification, quality, post harvest handling and marketing costs. Having identified market opportunities it is time to look at how some of these opportunities can be exploited. We may also have identified more opportunities than we can exploit.

The first way an extension officer can assist the farmer may very well be to improve marketing of existing production rather than the introduction of new products. The initial step then should be to conduct an audit of the existing situation.

Phase 1 - The audit of local resources and facilities

At the end of this stage the extension officer should have a clear idea of the crops, the marketing system, the individuals and the problems of the area. He or she will also have some idea of some possible solutions which are worth investigating. The break-even price of delivering produce to the most likely markets should have been calculated.

### **9.2 Product Information**

- What are the main crops grown and what varieties?
- When are they harvested?
- Do these crops have any advantages over other areas' supplies in terms of yield, quality, price, seasonality?
- What are typical yields per unit area and what prices are farmers currently receiving?
- What are the production costs
- What are the main production constraints
- Are the yields satisfactory
- What are the quality standards
- What volumes are produced locally
- Is the produce graded; if so why and into what grades?
- Is the produce packed into any packaging material; if so what type, size and cost?

- Are any new technologies or techniques being tried on these crops and are they successful?

### **9.3 Input supply**

- Are the correct seeds, fertilizers, sprays and boxes readily available for all farmers
- Are these inputs of the correct quality? Do input suppliers provide advice to growers, and if so, how good is the advice?
- Can farmers readily obtain equipment such as soil cultivation machinery and sprayers, either to buy or to hire?
- Do farmers have the money to pay for these inputs?
- Is credit available and from which sources
- What is the cost of credit

### **9.4 Local marketing system**

- How is the crop marketed at present?
- What are the marketing channels?
- Who are the most important middlemen or buyers?
- Which buyers have the best reputation?
- What prices are paid?
- Is there competition between buyers?
- Is there a great difference between the prices that individual farmers receive and if so why?
- What are the marketing costs
- How is produce transported to the market

Having conducted this audit, which of course, should be conducted with the participation of the community members, the EO should have a good idea of what is happening in the area, what the main constraints are and what are the aspirations of the people. In cooperation with the community and through their organisation it should now be possible to draw up an outline plan of action. This should contain an outline for short, medium and long term action. The short term plans should obviously be more detailed than the medium or long term. **It is very important that these plans be based on the ideas and aspirations of the community.** Elsewhere we have spoken about the importance of plans being realistic. Remember, plans should have some stretch in them but they

must be achievable. If plans are unrealistically difficult people will only become discouraged by constantly missing targets.

During this audit some marketing issues may have been identified which can be addressed immediately.

The first consideration, of course, is which crops will grow satisfactorily in the area. Using the results of the agro-ecological zoning and the extension officers' own observations of the area it should be possible to come up with a range of products that can be produced. The EO should consult as many farmers or other knowledgeable people in the area to find out what commodities were produced in the past, what are currently produced and any particular problems encountered. Here we are thinking mainly of pests and diseases, rainfall, soil fertility etc. The availability of labour is another important consideration as is the skill level of the farmers and availability of necessary equipment.

As it is the farmers who are going to do the work and take the risks it is very important that they should be consulted and involved in all stages. In the participatory planning approach the farmers themselves should collect most of the information. In particular the extension officers should ensure they meet small farmers and farmers who live in the more remote areas. Generally farmers have a good understanding of their problems and are delighted to have an opportunity to discuss them. There is no better way of finding out what is going on than spending time with the target community. This should not be a purely mechanistic exercise of question and answer sessions. The extension agent should try and become a part of the community and gain the confidence of the community. Very often the most important discoveries will not come from formal sessions but will come to light in the most unexpected ways and the most unlikely times. The extension officer's role is to listen and learn. He or she should try to understand how farmers might react to new ideas and which farmers are likely to be most positive. The better they know the community the better they will be able to identify strengths and weaknesses and capabilities. The extension officer should find out where farmers meet to discuss matters and whose opinions they particularly respect. If there are any farmers associations or organisations in the area they should be included if possible.

Here I should emphasise that it is not the EO who should make the plans. The plans should belong to the farmers. The EO's role is to advise and guide them not to make the plans.

The physical linkage between farm and market should be investigated. If an all weather road exists marketing will be much easier. It will be easier and cheaper to transport the goods, buyers are more likely to visit the area (the same is true for representatives of financial institutions or other support agencies) and input procurement will be easier and cheaper. If no all weather road exists then the question of whether goods can be got to market must be answered. If the answer is no then it should be established if the road can be repaired and can the work be organised and financed. This is more important with perishable product. Some non perishable products can be stored and got to market when road conditions permit. Other product such as timber logs can only be got to market if there is a road passable by heavy trucks. An unforeseen consequence of the logging ban in the Philippines is the difficulty in getting rattan to the market. This is because logging roads are not being maintained.

Initially at least farmer involvement in the marketing chain is likely be limited to the initial stages and may just be confined to harvesting and sorting and packing on the farm. The product may be purchased at the farm gate and the purchaser will take responsibility from there on. Farmers may become more involved in the chain and perhaps assemble the produce from a number of farmers at a collection centre or bring the produce to the barangay poblacion or municipal poblacion or even consign it to more distant markets. **An important role for the extension officer here is to assess the capabilities of individual farmers or groups of farmers to become involved in more complex marketing activities.** I have discussed marketing costs in another place and will not go into it again here only to say that plans should be achievable. For a plan to be achievable the goals must be realistic and we must realise good intentions alone are not enough.

**Performance = ability *times* effort**

If the basic ability is not there no amount of effort will compensate for it and likewise ability without putting in some effort will not deliver the goods.

If there is a marketing system in operation it obviously works and has developed the way it did for some reason. It may not be a perfect system but then no system is, some are just more or less perfect than others. Rather than try to effect radical change - and there is no guarantee that the new system will work any better (it might be worse) - it might be better to examine the existing system and see how it could be improved. This could mean that farmers need to become better organised to have some collective bargaining power. The market channel might remain the same but the centre of gravity might shift a bit.

Finally, the economics of the whole operation must be studied. The various activities need to be costed and an estimate of prices and yields made. Estimates should be realistic. There is no point in using the prices obtained for products during el Nino. The reason the prices were high was because yields were very low. If you are going to use these prices you should also use the yields. Similarly it is wrong to take the yields achieved during a particularly good cropping season - all yields will not be as good. Potential yields are sometimes used. This calculation assumes that there would be 100% plant establishment and 100% yield from each plant. Under field conditions it would be nothing short of miraculous to achieve this result. There may be too much or not enough rainfall, there may be some pest or disease problems, one plant might die (more likely several) or there might be some unforeseen soil fertility problem. Skills level will vary between farmers. Potential yields should be discounted considerably and the less skilled the farmer the greater the discount.

What we have just discussed here are the elements of a feasibility assessment and this is dealt with in greater detail in a separate paper.

When the feasibility study is complete a plan should be made. Again it is not the extension officer who makes the plan. The plan must be the farmers or the communities own plan. The extension officer will advise and assess the plan and may even do the actual writing but ownership of the plan must belong to the one who is going to implement it. The preparation and the components of a business plan are dealt with in a separate paper. Here I will just emphasise that the plan may be a very simple one or for more complex enterprises it will need to be more detailed, but some plan is necessary and some targets should be set in order that the progress of the plan can be monitored. These targets should be both physical and financial.

Finally it is time for action - to implement the plan. This is where the extension agent can really come into his own and where the farmers really depend on him/her. If farmers incomes are to be improved they will need to use new technology. This may be improving production or post harvest handling or marketing of existing products or introducing new enterprises. Whichever avenue is being pursued it will mean that farmers must learn and implement new technology. The primary source of this knowledge will be the extension officer. The extension officer can not be expected to know everything, but is the conduit by which that information is channelled through to the farmers. Even if the extension officers are not always conducting the actual training they are the ones to organise it and to identify the training needs of their farmers. Where training is given be it in the form of classroom sessions, field visits, demonstrations or study tours the extension officer will be the one to monitor the implementation at individual farm level.

Through the consultative process that was undergone opportunities, and constraints, strengths and weaknesses will have been identified. During this process the extension officer will have learned something of the aspirations of the community and how they would like to achieve them. The farmers should be encouraged to put forward their own suggestions and at least conceptualise their own plans. The role of the extension officer should be to advise and perhaps make suggestions and above all to act as a sounding board. The extension officer may be the first one who the farmers will have a chance to bounce their ideas off. The extension officer is external to the community and can be more detached and perhaps realistic about what is achievable. S/he should of course be sensitive to the community and even if proposals are a bit unrealistic the proposer should be guided towards more realistic plans rather than have their suggestions ridiculed and particularly in front of their peers. The use of opinion leaders can be very useful, provided of course they are positive and supportive. Group discussions should not of course be dominated by them and if this is happening the extension officer must find ways of having the weaker members heard. If it is not possible to do this in the group setting the extension officer must hold individual discussions.

## **9.5 The marketing system**

When the extension officer is conducting the audit of available resources one of the major elements to be studied is the local marketing system. This audit will begin at the sitio or barangay level but must also extend beyond this in order to understand the flow of product from producer to market and to get some idea of the location of the ultimate consumer. This is important because if we are to make improvements or change the design of the marketing channels we must first have knowledge and understanding of it. It is also important to realise here that whatever system is in operation, be it good or bad, it will have developed for a reason. An understanding of these reasons will help to identify which elements might be changed more easily than others or perhaps which other problems outside the marketing chain might first need to be dealt with. If, for example, a local trader has a monopoly of business in one or more commodities because he is financing all or part of production costs no amount of effort by the extension officer or anybody else can change the system without first organising alternative financing. If there is a monopoly on transport or some other element of the marketing channel then that monopolist controls the channel and changes can not be made without first breaking that monopoly.

It will be clear from what follows that much of the information needed must be collected from outside the extension officers area. It will be necessary therefore to network with other officers. This is an important function for municipal and provincial marketing officers.

We have also discussed in the section on marketing costs how important it is to have reliable estimates of the cost of providing an alternative system. Monopolies are not good, and especially if the monopolist abuses its monopoly power, but under some circumstances the alternative may not be any better.

Whatever happens, it is most unlikely that we are going to be able to change the entire marketing system. What we are trying to do, therefore, is to find the best way to work within the system, making what improvements we can where we can.

Some key points to be considered are:

- the price relationships between the different sales points in the marketing chain
- which companies in the distribution chain have reputations for honesty and integrity
- how growers can be kept regularly updated with market information in terms of prices and volumes and quality required.

Middlemen are subject to a lot of hostility, much of it unwarranted. They are generally accused of making excess profits and of dishonesty. It is sometimes not realised that middlemen perform an essential function in carrying out the marketing of produce. They are, in effect, the channel through which produce is taken out of the rural areas and money returned. Experience shows that, provided a market opportunity is identified, which is normally the responsibility of the middleman, farmers will respond by producing the crops. Only rarely is a lack of technology the critical constraint. Where the problem arises with middlemen is when there is a lack of competition. This is further exacerbated by a lack of information. Both these latter conditions are common in the project area.

Traders are often more concerned with establishing dominant or monopoly positions in their local area, than in trying to improve their service.

There is also a serious risk here in trying to replace or compete with local traders. These entities often have more resources and linkages than small producer organisations and can and will use this power to destroy any emerging competition. Finding ways to introduce or encourage competition between existing traders may be a more effective and viable alternative to trying to take over the marketing function directly. This is especially true when producer organisations are at the development stage and lack experienced management and sufficient resources and in particular sufficient experience and reputation in the market place.

Provided middlemen operate in an atmosphere of strong competition it is unlikely they will make excessive profits. Clearly if this were the case numerous other businesses would be attracted and the competition would force down profits. As in all businesses there are some middlemen who are dishonest.



The challenge for the extension officer is to help identify reputable middlemen and to ensure that the marketing system minimises opportunities for dishonesty.

## **9.6 The produce distribution system**

There are very many different systems of marketing agricultural products. They differ from country to country, area to area and from crop to crop and from farmer to farmer. The extension officer will need to fully understand the marketing system if s/he is going to be able to make it work for the benefit of farmers.

The most important stage to understand is the first link in the production/marketing chain, that between the farmer and the person to whom he sells. To help understand the system it is very useful to draw up a flow diagram showing different stages in the distribution chain.

Some likely business people who can form the links in the production/marketing chain are:

- contractors who buy crops in the field and undertake the harvesting;
- agents, collectors, hawkers or country wholesalers who buy the harvested crop at the farm;
- wholesalers who buy at rural assembly or village markets;
- commission agents or auctioneers who auction produce in a wholesale market on a commission basis;
- wholesalers who sell produce on a consignment or commission basis in the wholesale market;
- wholesalers who buy produce from farmers at firm prices and sell at the wholesale market for their own account;
- exporters and importers;
- secondary wholesalers who buy at the wholesale market and transport the produce either to sell to retailers or at another wholesale market where prices are higher;
- semi-wholesalers who are located near the wholesale market and sell produce by the box either to small retail businesses or directly to consumers.
- retailers who sell to the final consumer such as street hawkers, stall holders, retailers, greengrocers, supermarkets;
- catering establishments, food processors.

An example is set out in the diagram. The orchard contractor undertakes the harvesting, grading, packing and distribution of the crop and may hold the produce in storage. In some cases the contractor will also undertake some of the production functions. An example of this is mango contract sprayers. These people have power sprayers, ladders and other equipment which it might not be economical for individual producers to invest in. This system has a number of advantages:

- the farmer is partly paid in advance;
- 
- the farmer need not worry about organising labour and equipment for some production and harvesting functions;
- the contractor provides and finances the inputs necessary
- the contractor's labourers are skilled in spraying, harvesting, grading and making up the wooden boxes on site;
- the contractor will normally undertake the harvesting on a number of small farms which will achieve economies of scale in terms of transport;
- the contractor is a specialist in marketing and understands the requirements of the commission agents and wholesalers.

In this system it is the contractor who is taking the most risk. Because of this the contractor will expect the largest share of profit Risk and profit are very closely linked.

Larger and more wealthy farmers are more likely to perform more of these functions themselves. These wealthier farmers are in a better position to absorb the risks involved with marketing the produce themselves.

In most marketing chains there is a dominant business force. In the project area it is usually the suki trader. He may superficially appear to be only buying the produce from the farmer, working on a reasonable margin. In practice he operates very much like a bank, providing credit to farmers. While the margins on the produce may appear normally it is on the interest rate and perhaps mark-up on inputs etc that the big money is being made. By providing credit he guarantees that produce will be marketed through himself.

The commission agent sells to wholesalers. The wholesalers normally purchase several consignments of fruit and ship it in bulk to distant markets for re-auctioning. Other wholesalers purchase produce in bulk at the auction, split it into smaller consignments and sell it immediately to stall holders and street hawkers, often on short-term credit.

## **9.7 Marketing margins**

We have discussed marketing margins and how to calculate them in a previous section. During the marketing audit the extension officer should help the community to gather information at the various places along the line where the produce changes hands. Of particular importance here will be information on prices and the marketing functions performed. It is only with this information that a realistic assessment can be made of whether the margins at each stage are normal or whether excess profits are being made. Usually though as produce moves along the marketing chain competition increases. It is at the first point of exchange that competition is likely to be weak and there is the greatest room for abuse of power.

To do this properly the extension officer will need to retrace each step in the marketing chain and establish from each middleman his buying and selling pace. Typically, margins are greatest when the middleman pays a firm price and actually takes ownership of the produce. This is because he is taking the risk and risk and profit are closely linked. Once again the reader is referred to the section on risk in the marketing costs section.

When produce is auctioned or sold on a consignment basis, the middleman, be he a wholesaler, importer or commission agent will hold back a percentage commission, normally from the seller but sometimes also from the buyer.

As has been shown, accurate calculation of margins is extremely difficult. All too often it is assumed that from a simple comparison of an individual retail price, wholesale price and farmer price it is possible to accuse middlemen of excessive profits.

## **9.8 Wholesalers and middlemen**

*The EO should assist here - it is not his sole responsibility*

An important part of the extension officer's work is to help identify suitable and reputable middlemen as trading partners. This involves finding out which companies are best equipped and most prepared to trade in the produce from his area. Secondly, he should find out whether these companies have a reputation for integrity and honesty. Discovering this information involves not only having meetings with possible trading partners but also, in effect, taking references about their reputation from other traders or other farmers who may have done business with them. This sort of farmer information is often more readily communicated from farmer to farmer than farmer to extension officer. It is also the farmers who must make the final judgements on whether to trade with a particular trader. Remember it is the farmer who stands to lose if things go wrong.

There is often a shortage of simple company information on potential trading partners and yet it is crucial when growers are planning to supply a new market or start marketing. The top priority should be honesty, but it is also important to identify businesses which are appropriate to the type of commodities which are planned to market and the scale of production which are envisaged.

## **9.9 Information services**

Growers have to plan over the long term as there can be months and sometimes years between planting and harvest. However, it is also important to try to introduce flexibility in marketing in order to maximise profits and minimise risk. This can be achieved by ensuring that there is a system set up whereby the producer receives rapid feedback on the state of different markets. He or she requires information on prices and on the demand of the market in terms of quality and quantity. This information can be used to maximise sales when the market is short and quality demands are not as stringent. When prices are very low the response may be to send only top quality produce or in exceptional cases, not harvest the crop at all. Access to information on a number of different markets gives the producer the option to switch produce to the higher priced outlets.

It is absolutely vital that this market news information is accurate and rapid. In practice the most rapid method of communication is the telephone but few farmers in developing countries have access to phones. In the absence of a telephone link a well-run radio market news service broadcasting price and state-of-supply information has a number of advantages. As almost all growers have transistor radios the information is available to all. Growers can respond to market opportunities by diverting produce from one market to another. Ultimately, price differences between markets are reduced, which provides benefits to the consumer in terms of price stability and better continuity of supply.

Normally wholesalers and middlemen have an advantage in negotiation by being better informed on market prices. The growers' negotiating position is improved by having ready access to price information. This is particularly important when there is little competition between buyers, e.g. when an individual contractor bids for a fruit orchard on a farm. The extension officer needs to consider ways in which price information can be made more available.

Extension officers should find out what information is relevant and on which crops. Prices in distant markets which cannot be easily served by farmers are of less relevance than prices in nearby villages and town markets. These "local" prices are often not broadcast by radio stations. The extension officer should collect and disseminate these prices back to the farmers. The extension officer in consultation with the farmers should establish the most effective means of communicating this information to the farmers. This is discussed further in the paper on *market information systems*

One danger which the extension officer should be aware of is growers not understanding the reason for the difference in price between the farmer, the wholesaler and the retailer. It needs to be explained that distribution and marketing involves costs and business risks and prices have to cover the salaries of those involved in the distribution chain. Unless these costs are covered the marketing system will collapse.

#### Summary and conclusions

The main emphasis of this chapter has been on the need for information gathering and how to go about it:

- The extension officer needs to learn for himself the problems and opportunities of horticultural production in his region.
- He must find out what the customer wants in terms of both product and service.
- Finally, he needs to have gathered sufficient information to assess whether products can be supplied profitably to the market.

Although some of the basic necessary information may be available in reports and statistics, most of the information gathering will depend on picking up the views and opinions of individuals. This is a skill in itself. Much of the information required, particularly price information, may be considered sensitive. Some respondents will be suspicious of the reasons for wanting this information. They may, for example, be concerned that the information will get back to the tax authorities or it will be used to demonstrate that they make unfair profits.

At the outset of any interview the extension officer explain who he is, what he is trying to achieve and how that may be of benefit to the individual he is talking to. Respondents will be much more forthcoming if interviews are arranged at a convenient time. For example the best time to speak to wholesalers is often after the main trading period. During the early part of an interview a rapport should be established with the interviewee. Normally people enjoy explaining their business and how it developed and like to feel that their opinions are respected and that their advice is being sought. The more sensitive questions are best asked towards the end of the interview when the atmosphere should have changed from slight suspicion to that of interest and cooperation. People's opinions will be different but the extension officer should try to use all the information that has been gathered to build an overall view of the market and how it works.

### **9.10 Finally a word of warning**

A trend means that somebody has identified a market opportunity and begun to exploit it. However, all marketing opportunities are limited in scope; the gap in the market gets filled, and then overfilled in the course of time. The people who make money out of those trends are those who start them, not those who follow them. Those who try to jump on a bandwagon when it is moving fairly fast are liable to fall off and get hurt.

## 10.0 Production planning

Extension officers should be able to advise farmers on planning their crops. This will be part of the farm planning process. There are many factors to be considered here. From a marketing point of view the important task for the extension officer is help the farmers to match their production with market opportunities and constraints. There will be a number of tools to help the extension agent in his work. Agro-ecological zoning will give an overall picture of what can be technically produced in the particular area. Commodity market studies will indicate those major commodities for which there are market opportunities and indicate likely future trends. Commodity profiles will give information on the production, harvesting and post harvest handling of these commodities. Other more locally conducted market studies will have identified local market opportunities.

The task for the extension officer is help to translate all this information into a workable farm plan for individual farmers. Important criteria such as labour availability and crop rotations will have to be taken into account. Here the extension officer should follow the steps set out for conducting feasibility assessments. It is at this stage that all local conditions and constraints, identified through the participatory planning process, will be factored in. Only the extension officer working with the local community can perform this function. It is not something which can be done by planners in remote offices. The more familiar s/he is with local conditions and the capability of the producers the better should be the planning process and the plans produced.

The key approach will need to be market oriented production. This means growing crops for which there is likely to be a demand and which will probably be profitable.

As everyone knows farming can be notoriously unpredictable. In fact the only thing we can say with certainty about farming is that there are no certainties in either production or marketing. This is even more true of the high value horticultural crops that is being promoted by the programme. Farmers are generally a conservative group. Experience has taught them that it is usually better to err on the side of caution. In marketing jargon this is termed as being

*risk averse* i.e. they do not like taking risks. Anything the extension officer can do to lower the risk of an undertaking will help the adoption process, but as we have already said we can not get rid of all risk. There are some factors in the environment over which we have absolutely no control. We can not make it rain, we can not stop it from raining. Sometimes, though, we can modify the impact of environmental factors. We can impound water and use it for irrigation during dry spells. We can improve drainage and use conservation techniques to overcome the effects of rainfall. The more technical knowledge and skills farmers have the less risky production becomes. Better market information and arrangements will also reduce risk. Farmers can also transfer risk by entering into contract growing arrangements. No matter how well prepared a farmer is there will always be an element of risk. A weather phenomenon, such as el nino, will test the best of irrigation systems. Unforeseen marketing events may lead to an increase in supply or production of substitutes and cause drastic price reductions. Imports of ginger into the Philippines from Indonesia have led to a collapse in ginger prices.

If farmers can not eliminate production and marketing risks they will still at least desire some level of income stability. The best way of ensuring this is to spread risk. One major way of achieving this is to produce a range of products. If these products have different production or marketing characteristics the risk will be spread further. But even within the one commodity steps should be taken to spread the risk. Some species of fruit are not regular croppers. Within the same species some varieties are more prone to irregular bearing than others. Conditions which may cause one variety not to bear in one particular year may have no effect on a different variety. The situation may be reversed in another year. In a particularly difficult year for cropping, livestock production can still give a good return. The extension officer should help the farmers to prepare plans which will take account of this. By helping farmers to reduce risk and to spread risk we make it easier for them to invest in new technology and commodity production. Reducing risk can make it easier for farmers to obtain credit.

As skills and prosperity increases the balance between more risky enterprises and more reliable income-earning ones can be altered. The extension officer should always be on the lookout for enterprises where the smaller farmers have some comparative advantage. Small farms generally have more labour available



per acre. They can take advantage of this by concentrating on growing labour-intensive crops. These are crops which cannot be harvested mechanically and may also require transplanting, pruning, hoeing and multiple-hand harvesting.

Very often individual growers will have preferences for crops which they feel comfortable growing and/or which grow well on their land. Or a farmer may just not like growing a particular type of crop. The farmers preferences should always be given high priority. Remember and remember well, it is the farmers who are going to do the work, not the extension officer or anybody else. If a farmer is not interested in an enterprise he is hardly likely to give it his best effort.

The farmer is also the one who is undertaking the risk. It is the farmers capital that will be lost if a venture goes wrong. The extension officer should not put his or her position of trust with the farmer at risk by putting undue pressure on farmers to undertake enterprises with which they are not comfortable.

### **10.1 Post-production advice**

All living things respire (breath) and transpire (lose water). While a plant is still growing the respiration and transpiration losses (water and some nutrients and gasses) are replaced through the roots and leaves. When the fruit or vegetable is detached from the parent plant these losses continue but can not be replaced. Respiration leads to a build up of gasses and temperature. Water loss causes the product to wilt or shrivel. Respiration is usually higher at higher temperatures and transpiration is higher at lower temperatures. These processes cause quality to deteriorate. The higher the rate of respiration the faster the loss in quality. **In general, the quality of fruit and vegetables cannot be improved after harvest.** Everything that happens to the product from the time it is harvested until it is on the consumers table can be described as post harvest handling. Post harvest handling then is really an exercise in damage limitation.

Post harvest handling then is concerned with getting the product from the producer to the consumer in a form and quality acceptable to the consumer and if possible give the product some competitive advantage in the market place. It is part of the marketing process.

Quality has many attributes. Depending on the end use and the demographic and socio-economic status of different consumers various quality attributes will be more or less important. This is dealt with in greater detail in the *Guide to Marketing* and in the section on quality.

While, strictly speaking, harvesting is not part of the post harvest handling sequence it is the first stage in the physical marketing process. Harvesting is where things can start to go wrong. Much of what happens at harvesting can influence what happens between harvesting and consumption. It is not really possible to say where harvesting ends and post harvest handling begins. So we will treat harvesting and post harvest handling as parts of the same continuous process.

We will not attempt to cover the technical details of post-harvest handling crops here. These will be dealt with in the various technical guides for each commodity. The main emphasis here is on the commercial implications of different harvest and post-harvest practices.

**Harvesting.** Depending on the market being served, the stage of harvesting can vary. For example mangoes for processing into chutney are harvested green with the flesh still white. These fruit will not ripen properly and are unsuitable for the fresh market. Mangoes for the fresh market are harvested with the skin green but the flesh changed to an orange yellow colour. These fruit would be unsuitable for chutney making.

Some crops however can be harvested at a variety of stages for the same market e.g. carrots can be harvested when they are quite small and harvesting can continue for quite a long period. Here the overriding consideration would be price and at the beginning of the season when supplies are scarce and prices high it may well be worth the farmers while to sacrifice yield in order to attain higher returns. Exploiting these short-term market opportunities requires a close link with the market.

An otherwise perfectly good product can be totally spoiled by incorrect harvesting, either in terms of harvest technique or timing. This of course has major implications for marketing. If fruit is knocked to the ground instead of

using a ladder or picking pole and bag it will get bruised and secondary rots will set in fast.

If harvesting is delayed and product is fully ripe it may have a very short shelf life and be very difficult to handle or transport. If it is over mature it may be totally unsaleable. If it is immature it may not ripen properly.

***Harvesting and crop maturity.***

A fruit may be mature but not ripe. There is an important distinction here. So when we speak about stage of maturity we are not referring to ripeness. There is also a clear distinction between physiological maturity and commercial maturity. Fruit may not be fully physiologically mature but can be commercially mature.

Shelf life and long-term storage is affected by the maturity of the crop at harvest. The storage characteristics of root vegetables are generally improved by only harvesting fully mature crops. Examples are sweet potatoes, carrots, onions, garlic, potatoes and yams.

Harvesting of cassava tubers can start between seven to ten months after the planting of cuttings, depending on variety. Cassava does not store well and on small family farms the largest tubers are harvested first, without cutting the stems. The small tubers are allowed to grow on. The production of cassava roots is at its highest 18 to 20 months after planting.

Melons are another example of a crop where the timing of harvest is crucial for quality. Harvest too early and the full sugar content is not developed, too late and they lose sugar and become soft.

Some produce such as pommelo will not ripen off the plant and if harvested too soon must be dumped.

Some fruit have to be harvested when they are not completely ripe in order to transport them to distant markets This is particularly true of fruits which are not suitable for long-term storage but need their shelf life maximised. Examples are bananas, pineapples, mangoes and avocados. Mangoes to be air freighted should be riper than for sea freight.

Avocados and mangoes will generally ripen during transport. Pineapples for local consumption or canning are normally harvested when the fruit has yellowed up by 25 to 50 percent. For distant markets harvesting should take place when the first hint of colour change has been observed at the basal end.

The optimum harvesting stage for most crops will depend not only on the climate and distance to the market but also on variety and growing conditions. In individual cases, when new distant markets are being explored, experiments should be carried out to find the best stage to harvest fruits, by sending samples at different degrees of ripeness and assessing which is most favoured.

For some products such as citrus specialist skills and techniques are necessary to determine optimum harvest time. The extension officer should call in the necessary expert assistance in such cases.

***Harvesting and quality.*** What is often not understood by growers is the effect of their harvesting and handling on the quality of the produce in the market. Very often damage is done during harvesting or between harvesting and the product leaving the farm but this damage does not show up until some time later. The damage can even be done before harvesting. For example, anthracnose infection on mangoes.

Poor treatment has a number of effects including:

- the price is reduced
- in the long term, the reputation of the production area is diminished (again tending to result in lower prices). The risk factor discussed under marketing costs is relevant here.
- damaged produce can not be put into storage.

An improved system of harvesting and handling produce will result in a product with better appearance and shelf life. In general, prices for the produce will be improved but sometimes the system has to be changed to ensure that the price rises are passed back to the grower.

***Timing of harvesting during the day.*** Ideally harvesting should take place when the crop and the climate is coolest and the plant is most turgid, i.e. has the

highest moisture content. This is in the early morning. In practice other criteria also have to be taken into account. For example, the dew should be dry on citrus and the latex flow of mangoes is at a minimum at mid-morning.

Harvesting also has to take into account labour availability and when collection will take place in order to minimise the time produce is left standing in the field.

**Harvesting techniques.** On high trees fruit can be harvested with a hook and a catching bag on a pole or similar harvesting aid. This prevents fruit falling to the ground. For other crops knives and clippers can improve harvesting practices because they can cut through fibrous tissue, stems and leaves can be trimmed and clean cuts reduce the likelihood of infection. Tools like this are used for harvesting lettuce, cabbage, sweet pepper, egg-plant, honeydew melons and banana.

*Leafy vegetables* are harvested by cutting the plant with a sharp knife as close to the root as possible. Uprooting results in soil coming into contact with the produce.

Occasionally diseases can be transmitted from plant to plant. Tools should be cleaned often and, when virus diseases are a problem, knives should only be used for trimming not for cutting the fruit from the plant.

*Tuber and root crops* are normally harvested with forks or hoes. The digging should start far enough away from the plant to avoid mechanical damage. Harvesting is easiest when the soil is relatively dry as both damage and the need for washing is reduced.

**Field containers.** In general the less often produce is handled the lower the risk of damage. If possible, produce should be harvested into the container in which it will be stored or transported. If this is not possible great care should be taken in transferring product from picking bags or baskets into other containers and in placing the fruit in the picking bag in the first place. Containers should not be too large in order to avoid crushing. For more delicate products containers should be lined. When full containers should not be handled roughly.

With picking bags it is preferable to be able to release the bottom so that the produce can be let out gently, rather than upending the bag.

**Harvesting system.** With highly perishable produce damp cloths can be used to give protection against the sun's heat. Field containers should be removed to a shaded area as soon as possible. Some leafy vegetables may be sprinkled with water at intervals to maintain leaf turgidity. Field assembly points, such as a shadehouse made out of natural materials or a canvas tent, should be used in order to keep the produce cool and allow ventilation. Containers should be periodically cleaned.

**Curing and drying.** Bulb crops such as onions and garlic can be dried in the field if the weather is suitable. Alternatively drying can take place under cover either but this is more labour intensive. The aim is to harden the outer scales and remove moisture from the neck in order to extend storage and marketing life.

Most root crops (but not cassava) respond to warm moist conditions after harvest by thickening and hardening their skins. This provides protection against dehydration and infection. Wound healing occurs. This is called curing and it significantly improves storage life. Curing can be carried out in tropical areas at little cost by stacking the produce in conditions where temperature and humidity are allowed to rise to 25 to 35°C with a relative humidity of 85 to 100 percent for one to seven days, depending on crop and variety.

**Trimming and sorting.** Cabbages, cauliflower, chinese cabbage and lettuce will have their outer leaves trimmed, except for three or four wrapper leaves, to give some protection to the head. Long stalks attached to the fruit, as in citrus, should be cut to prevent damage to other fruit. Provided the market wants graded produce and is prepared to pay for it then selection and grading are justified. The additional prices must cover the additional costs. Buyers may specify grading standards, particularly in the export market where international standards may be enforced. Even if buyers do not specify standards the farmers should be aware of the market requirements.

Produce for long term storage should be disease and blemish free and therefore needs to be sorted. When transport is expensive it is often only justifiable to send top quality crops. Produce is generally separated according to quality

criteria, it may also be graded according to ripeness or colour and size. The crop is then normally packed in. to different containers. This facilitates marketing into different markets.

Preliminary sorting can sometimes be done in the field and depending on the market it may be possible to pack directly for the market in the field. This is the most cost effective method. If further grading or packing is necessary it usually preferable to do it in a more specialised packhouse. Packhouses should be kept clean at all times. Some form of insulation is also necessary to prevent temperatures rising too high. Increasingly overseas customers are carrying out hygiene inspections of suppliers' packhouses.

***Packaging and presentation.*** The two main functions of packaging are to help prevent mechanical damage and to sort the produce into an acceptable size for the market and for handling. Good packaging can also enhance the attractiveness of the produce. The four main types of mechanical damage are cuts, compressions, impacts and vibration rubbing. Care in harvesting and handling will help eliminate cuts and wounds. Lining of packaging material with paper or leaves can also prevent damage.

*Compression bruises* can be restricted by using containers which are strong enough to withstand multiple stacking and using the correct size container for the particular commodity.

*Impact damage and bruising* can be the result of shocks in transport or dropping. This may occur either because each package is small enough to be thrown or too big to be easily handled. The largest size should not exceed 50 kg as this is the maximum weight which can be easily handled. Below that the size specification will depend on the customers' requirements-be they the retailers or consumers and the physical attributes of the product.

*Vibration damage* generally occurs during transport. This kind of damage can be significantly reduced by achieving a balance between preventing the produce from moving within the packaging and forcing the produce together. Fruits are prevented from rubbing against one another by the use of cellular trays, individual wraps or cushioning pads. Longer wheel-based vehicles reduce vibration and consequently crop damage.

Packaging can be a major cost. An attempt should be made to establish if the additional cost is worth it. This is not always a straight forward exercise. Packaging may not lead to any increase in price so at first glance might not appear to be cost effective. Packaging may of course reduce losses from handling and transporting, resulting in a bigger quantity of the produce being marketable. An example of this would be eggs. Eggs sold in trays do not command a higher price than eggs sold loose, but a lot more of them will reach the market. In some cases traders or transport operators may just refuse to accept product that is not packaged in some way.

**Storage.** Produce can be stored for both short-term and long-term purposes. Short-term storage is used to provide flexibility in marketing, for example when awaiting transport or because buyers are not immediately available. Most horticultural crops are perishable and can only be stored for a few days. Only rarely is it worthwhile storing crops of this nature to await higher prices. Storage will reduce quality and shelf life. It is costly and, in most instances, when the produce is withdrawn from storage it has to compete in the market against freshly arrived produce. Some horticultural crops can be dried naturally and stored for various periods, e.g. bulb onions and garlic. Others, such as potatoes when mature will also store for some time.

A few (apples, grapes) crops are adapted for long-term storage. These can be held in stores well beyond the normal harvesting period. In turn, higher prices can normally be obtained and greater volumes of produce sold. The storage conditions required for these will however be beyond the means of small producers and is beyond the scope of this manual.

For some produce a cold chain is necessary if distant markets are to be served. This cold chain will generally be owned and operated by commercial parties. The challenge for extension officers and small farmers is to get produce into that cold chain in the right condition. This may involve some mechanism to remove the field heat and to get the produce transported quickly. Much of this will depend on good organisation rather than any sophisticated equipment.

If product is put into cold storage it usually needs to be kept in some form of chilling cabinet until it is used. The retailer should have temperature controlled



display cabinets and the consumer a refrigerator. For local markets, and especially when the product ends up on the market floor or on the pavement there is not much point in cold storage.

Often in the case of cold storage the successful stores are located in large urban areas because

- produce can be released immediately on to the market in response to high prices
- supermarkets will have refrigerated cabinets in their display areas
- facilities can also be used for other produce - thus spreading the cost

Refrigerated storage is much emphasised in the literature but extended shelf life can be achieved without investment in expensive equipment. In practice the quality of the produce and humid, shady conditions are higher priorities.

Ventilated stores in the right conditions with good management can be extremely cost-effective. The building should be protected from the sun's heat by such techniques as shady trees, painting the building white, using insulation material in the roof or even thatched roofs and thick walls. The building should be positioned to intercept the prevailing night time winds, if there are any. In tropical climates storage is more difficult because night temperatures are also high. When the ambient air temperature falls below that of the produce, normally at night, the air is allowed to flow through the stored produce by the opening of louvres. If a power source is available fans can be used to increase airflow rates. Steps should be taken to keep stores free from rodents and other pests.

The extension officer can improve on-farm storage practices by training growers in correct techniques and by carrying out comparisons between the recommended practices and those that the farmers normally undertake. At an open day the difference between the two batches of crops can make a vivid demonstration of the validity of his recommendations. Photographs should be taken to be able to demonstrate the differences in future years.

**Transport.** Most growers who do not sell to traders will transport produce to market in hired lorries or pick-ups. The grower will be given a fixed price for individual use of the transport or the lorry owner will charge by unit. In the

Philippines it is common to see jeepneys carrying both passengers and fresh produce. Such produce needs to be well packed as it usually gets very rough handling.

If transport is hired it is important to match the load with the size of the vehicle. The extension officer can play a role in organising load sizes. Larger volumes of produce can bring cost savings through both economies of scale and the possibility of attracting a number of lorry owners to encourage price competition between them.

If payment is per piece the transport operator may be inclined to overload the vehicle - good packaging will help here.

Generally the larger the individual load, i.e. the larger the truck used, the cheaper the unit/cost of transport.

An important consideration in hiring transport for perishable produce is reliability. There are a number of reasons for this:

- if transport breaks down and the produce is left on the truck for a day or two it may be totally spoiled - usually the growers will have little hope of compensation
- reliability of supplies is important for retailers and shippers - a reputation for reliability can be a significant marketing advantage

While cost of transport is an important consideration it is well to remember that costs can only be cut so much before the quality of the service deteriorates. The cheapest solution in the short run is not always the best.

## **11.0 Marketing extension techniques**

### **11.1 Farmer teaches farmers**

A successful farmer explains to a group of farmers his production and marketing practices. The meeting is most effective on the farmer's own farm. The farmer may be a member of the community or a successful farmer from another area.

### **11.2 Demonstrations**

Practical demonstrations of techniques such as harvesting, cleaning, grading and packing, preferably taking place on a farm. Prepared samples which demonstrate the differences overtime of different handling practices can be effective, as are samples of competing produce and photographs. Photographs of product defects which are unacceptable in the market are just as important as photos of good product. It can be particularly useful if demonstrations can be given by representatives from the commercial sector.

### **11.3 Simple Grading aids**

Simple grading aids like measuring sticks, boards with different diameter holes, cutting boxes etc can be invaluable and especially when farmers are not familiar with grading.

### **11.4 Talks and seminars**

Talks from key players in the marketing chain can be useful. While instruction from extension officers and marketing officers or other officials are helpful and indeed necessary talks from traders or retailers or processors representatives can be particularly helpful. Not only will the channel member be able to communicate market information and requirements, farmers will be able to ask questions and discuss actual or potential problems. The traders will also be able to get a better understanding of their suppliers.

While seminars can also be useful they are generally only appropriate for a relatively small section of the community (opinion leaders, trading association officers etc).

### **11.5 Problem-solving techniques**

With this technique farmer groups are encouraged to identify their own major problems. The problem solving can be tackled systematically, by calling in specialists individually to advise the group or by forming a panel to answer farmers' questions. Alternatively, the group might be encouraged to decide their own solutions which they then implement themselves collectively. As far as possible this latter approach should be adopted. If farmers propose a solution themselves they are much more likely to be committed to achieving it.

### **11.6 Study tours**

Farmers are taken on a study tour to make their own contacts and to see the market for themselves, visit processing centres and observe how their produce withstands transportation. Farmers visit farmers in another area to exchange experiences and see new techniques. This experience alone can transform a grower's views on production and marketing.

### **11.7 Written information**

Fact sheets are prepared and distributed. The extension officer should ascertain from the farmers the most useful and comprehensive form for the information to be presented. It should be understandable by all the intended recipients, not just the most highly educated ones. It should also be borne in mind that the message should be clear and unambiguous. To achieve this the communication must be uncluttered (it is very easy to get carried away impressing people with how well we can write and lose the message in the middle of it all).

### **11.8 Market news services**

As already discussed a market news service can be invaluable.

### **11.9 Monitor performance**

The extension officer should find ways to monitor performance in achieving targets. This is more fully discussed under business planning. If monitoring is conducted on a regular basis there is a better chance of taking corrective action if needed and if supply targets, and especially contract tonnage targets, are not going to be met the buyer can be informed in advance. This sort of regular communication should help to enhance the reputation of the supplier.

### **11.10 Demonstration/pilot plots**

If an extension officer wants to demonstrate a new technique or to pilot a new crop it can be very useful to select a competent farmer who with coaching from the EO will devote a section of his farm to the pilot project. A farmer who can be relied on and is willing to allow other farmers to come and view the demonstration should be selected. Getting a farmer to carry out the work himself has two advantages:

1. It frees the extension officer from having to get a site and do or organise the work himself
2. The results may appear more credible to the other farmers when they see it was one of their own community who did all the work on the demonstration plot.

Where possible these demonstrations should be conducted by different farmers over time rather than the same one all the time.

Even on a farmers own crop the extension officer might be able to persuade unwilling or sceptical farmers to try out something new on a small area first. If it does not work there is little lost and if it does the farmer will be convinced and the EO's reputation will be enhanced.

## 12.0 Investment advice

Business and investment advice can also be part of an extension officer's work. Often farmers are tempted to make investments which are expensive and do not improve the viability of their farm significantly. Investments should be cost effective. The most usual case is that there will be many more opportunities for investment identified than there will be funds available. Investment must be prioritised. Sometimes for an investment to be effective something else must be done first. In such cases the order for the investments to be undertaken is important. In other cases the order is not important so you consider which gives the best return.

Some farmers will be more risk averse than others. One farmer will be comfortable undertaking a particular investment where another will not be. Farmers should not be encouraged to undertake projects with which they are not comfortable. If something goes wrong they will look for somebody to blame and the extension officer is likely to be a prime target.

Generally speaking investments that help to protect existing income should be given the highest priority. These will tend to focus on production and conservation of the production base. Opportunities for improving prices of existing production should be next. New enterprises would probably be the next priority.

The more risky the crop the greater is the likely return from ensuring production stability. In seasons where yields are depressed due to pests and diseases or unfavourable weather prices are likely to rise significantly. Farmers whose yields are least affected will make high profits in these situations.

Generally speaking investments which improve quality will always give superior returns.

In the end of the day guidelines are just that. They are there to guide people in decision making. Conditions vary from one location to another and from one situation to another, even in the same location. It is how guidelines can be

interpreted and adapted to local conditions that will determine how effective plans will be. The extension officer is the key person in helping the community to adapt all these guidelines to the local conditions. Other agencies and other officers in the LGU are important resource people and can provide valuable and much needed support and assistance to the extension officer, but the extension officer is the link between the community or the individual farmer and this support network.

Some common mistakes in horticultural marketing

Marketing like everything else is a learning process. There is no doubt that mistakes will be made. The only way to avoid mistakes is to do nothing, but then that would be a mistake in itself. If we can learn from our mistakes then it is not a total waste and may even be turned to our advantage in the future. In fact, this is what we call experience.

Mistakes can come at two levels. There are tactical mistakes and sometimes because of lack of perfect information wrong decisions will be made. Provided we are aware that this can happen and are prepared to adjust plans in the light of new information or changed circumstances then too much harm may not result. There are also policy mistakes and these are potentially more damaging.

Some of the more common errors are dealt with below.

### **12.1 Price fixing by governments**

Fruit and vegetable production can be very risky, with market prices sometimes being too low to cover costs. As a result there is often an outcry, particularly from growers, for the government to buy horticultural produce at fixed prices or to at least set minimum prices. Sometimes state commodity boards are set up and if prices fall below a certain floor price the state agency intervenes and buys up surpluses. At best this is only a short term solution and can actually lead to an increase in production of a commodity which is already in surplus. Apart from the waste in scarce resources these schemes also tend to protect inefficient producers and when they are removed, as eventually must happen, all that remains is an uncompetitive industry.

### **12.2 Food processing to utilise surpluses**

When prices are forced down because of over-production, it is often recommended that a food-processing plant be established to utilise the surplus. Successful, profitable and self-sustaining food-processing industries cannot be based on the occasional supply of raw material when the fresh market is glutted. Processing requires expensive investment in machinery. It is crucial to make optimum use of the equipment and minimise idle time. Successful plants have to have a guaranteed supply of raw material and must produce products for which there is a demand. Food processors enter into contracts with growers to



ensure that supply is evenly extended over the longest possible supply season. Prices are agreed in advance. Often produce destined for the fresh market is not suitable for processing. The processed food market is also very competitive. Regularity of supplies is often vital in order to be competitive. Processing occasional surpluses will not allow this.

Sometimes the opposite can happen. Farmers enter into contracts to supply to processors at fixed prices. Because of scarcity the price on the fresh market may rise very high. Farmers sometimes renege on their contractual commitments in order to avail of high prices on the fresh market. This is a mistake. Farmers should take a longer term view. These high prices are usually a short term phenomenon. In the following season the fresh market price will be back down to normal levels but the processor may be gone out of business or made alternative arrangements for supply of raw material.

This should not be confused with using surplus production to support cottage industries or indeed planning to make preserves from produce that would otherwise be dumped. Generally these are operations that do not require large capital outlays or sophisticated buildings or plant. Sometimes bigger enterprises may grow out of operations like this. Generally though such operations serve very local markets.

### **12.3 Mechanisation**

It is often felt that mechanising operations such as grading will improve the quality of produce or give some other advantage. Grading never improves quality, it merely separates qualities. High quality produce is mainly dependent on growing conditions, the production techniques used and post harvest handling. Mechanised graders are very good at separating produce into different sizes. This is the least important aspect of grading. The most important is separating into different quality grades.

This can only be effectively done by the human eye. It is a common and recurring mistake that technology will in itself solve problems. Far greater advances can be made by improving management and adapting existing systems.

Investment in expensive machinery may be a later requirement of an ongoing, successful, operations that have grown beyond the supply of available labour. If mechanisation is to take place every effort should be made to keep costs to a minimum by using as much local material as possible.

Remember, it is very difficult to make money out of concrete and steel.

#### **12.4 National grading standards for the domestic market**

It is often recommended that horticultural marketing will be improved by the imposition of national grading standards. National standards can usually be justified for export, and indeed could be regarded as necessary to protect the national reputation in overseas markets. When compulsory minimum standards are introduced for the home market it will usually put up prices to the consumer. This would be entirely detrimental because it would lower consumption and reduce the size of the local market. Ideally policy measures should reduce prices and thereby increase consumption. Grading standards can be introduced for producers but as the produce moves along the channel there is no control over how the produce is treated. Any positive effects of grading can be easily negated. Thus, the producer may have been put to the expense of grading but the consumer will be no better off.

In practice a quality standard system exists in most markets even if it is not formally recognised. Different market segments demand different quality, and the market usually responds by introducing informal and flexible grading standards which respond to the market requirements and state of supply and demand. In practice grading and sorting will take place throughout the marketing chain. Some grading, particularly of fruit, takes place in the field. A visit to wholesale markets will often reveal product being graded for different segments.

#### **12.5 Storage of produce to exploit price rises**

In the section on marketing costs we have already discussed storage costs. We will not discuss it further here only to make the following observations:

- Most horticultural crops are only suitable for short-term storage, maybe only a few days.

- Storage is expensive and detracts from freshness and quality. In most situations, when the produce is brought out of store it has to compete with freshly arrived produce.
- Relatively few crops are suitable for long-term storage.
- Storage in production areas is often not successful because the storage facilities are under-utilised for most of the year and are therefore uneconomic.
- Suitable storage facilities may not exist
- There is no guarantee that prices will rise during the storage life of the product

## **12.6 Government-run trading operations**

Middlemen and traders are often accused of making excessive profits.

Sometimes the response is to set up government run trading operations. These are thought to result in improved grower returns and lower consumer prices.

They may sometimes increase returns to farmers, but only if the operation has a trading monopoly. They rarely reduce consumer prices.

In practice most government-run enterprises marketing horticultural produce are failures and can only cover costs if they have some special monopoly, e.g. importing food products. Amongst the most common reasons for their failure are:

- excessive and unnecessary investments being made in equipment and buildings;
- management only working regular office hours and not having a profit incentive, unlike private-sector businesses;
- overstaffing and restrictive working practices;
- government trading operations not having sufficient flexibility to rapidly adjust prices.
- there is a technique to buying and selling perishable horticultural produce at a profit;
- lack of quality control and purchase of all produce offered by farmers;
- high wastage levels of produce.
- Many costs are not fully accounted for

Horticultural marketing is a highly competitive business requiring strong entrepreneurial and trading skills. Decisions have to be made rapidly and long hours worked, and civil services are not set up to operate in this way.

In export marketing, however, there are many examples of governments successfully establishing a single organisation to oversee the development and promotion of horticultural exports. These organisations have the advantages of:

- preventing export prices being forced down by produce from the same country competing against itself;
- being able to afford highly skilled, modern managers capable of taking a strategic approach to marketing rather than a short-term, spot trading mentality typical of traders on local markets;
- being able to undertake centralised promotional and advertising campaigns;
- having large enough volumes of produce to negotiate favourable terms with shipping companies and with major buyers.

Generally the activities of support and control are allocated to the public sector, leaving the trading and business functions in the hands of the private sector.

## **12.7 Ultra-modern post-harvest techniques**

Very often the level of post-harvest losses is claimed to be very high in developing countries, and . The introduction of post-harvest techniques used in highly developed societies, such as sophisticated packaging and cool chain techniques is expected to reduce crop wastage.

Most modern post-harvest techniques are also very expensive, requiring a high initial investment in imported equipment. They also require highly trained staff and managers and immediate access to spares and skilled technicians.

For example, cardboard cartons can only be used once. They require considerable investment in manufacturing facilities and the continued importation of raw materials. Cool chains require specialised refrigerated stores close to the production areas in order to remove the crops' field heat, as well as refrigerated vehicles. Refrigerated containers are very expensive and the produce stored in this way should then be held in refrigerated counters even in the retail shop. The system is only practical and viable when an integrated chain is established, which requires a substantial coordinated investment, often from different firms, and when large volumes of produce are handled.

These technologies are very often inappropriate for developing countries because the costs are greater than the savings. They work best in countries with a highly developed infrastructure, i.e. good roads, reliable and cheap electricity supply, a highly skilled workforce and easy access to spare parts. Most importantly, the consumer must be prepared to pay a higher price for the produce. High technology like this does not work well in isolation. Newly introduced technologies should not be significantly more advanced than the general level of technology in a society. They should also be carefully costed to ensure that they do not add to the costs of marketing and distribution.

### **12.8 Change for the sake of change**

A marketing adviser or an extension officer with special responsibilities for marketing may feel obliged to make changes to the existing marketing system. What is not often fully appreciated is that most marketing systems have evolved and will continue to respond to changing market requirements. Generally there are very good reasons why they function as they do. Like all systems a marketing system will be imperfect. However, if the system functions reasonably well, if there is competition and if produce is well distributed around the country then any marketing adviser should be extremely wary of trying to impose unnecessary changes, which may destroy what he is trying to improve. When change is not necessary, it is necessary not to change.