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5

Marketing extension guide

HORTICULTURAL MARKETING

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5

Marketing extension guide

HORTICULTURAL MARKETING

by
Grahame Dixie

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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Contents

Figures

Tables

Boxes

Annexes

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Grahame Dixie

1 An introduction to horticultural marketing

Main points in Chapter 1

WHAT IS MARKETING?

Definitions emphasize ...

The importance of profit;
Supplying what customers want;
Moving produce from farmer to consumer.

HOW CAN IMPROVED MARKETING HELP FARMERS?

The marketing weaknesses of small farmers;
Farmers' perceptions of their problems;
How extension advisors can help identify solutions.

WHAT ARE THE ADVANTAGES OF SMALL AND LARGE FARMS?

WHAT DOES MARKETING CONTRIBUTE ...

to the rural economy?
to the consumer?

WHAT IS MARKETING?

There are many definitions of "marketing." Here are two particularly relevant to horticultural marketing.

The first is ...

Marketing involves finding out what your customers want and supplying it to them at a profit

This stresses two important points:

- the marketing process has to be **customer oriented**;
- marketing, a **commercial process**, has to provide farmers, transporters, traders, processors, etc. with a profit or they will be unable to stay in business.

Marketing therefore involves:

- identifying buyers;
- understanding what they want in terms of products and how they want to be supplied;
- operating a production-marketing chain that delivers the right products at the right time;
- making enough profit to continue to operate.

The second useful definition is ...

The series of services involved in moving a product from the point of production to the point of consumption

This definition emphasizes that marketing is a series of inter-connected activities. In the case of horticultural marketing these include:

- planning production;
- growing and harvesting;
- grading of products and their packing, transport, storage, processing, distribution and sale;
- sending information from production area to market (e.g. products available, volumes) and from market back to producing areas (e.g. prices and supply levels, consumer preferences and changes in taste).

All of these activities are links in the production-marketing chain. Like any chain, it is only as good as its weakest link.

Marketing systems are dynamic. They are competitive and involve continuous change and improvement. Suppliers who have lower costs, are more efficient and can deliver quality products are those who survive and prosper. Those who have high costs, do not adapt to changes in market demand and provide poorer quality are often forced out of business.

HOW CAN IMPROVED MARKETING HELP FARMERS?

Most farmers see themselves as “price takers”, thinking that they have no control over prices and have to accept what is offered. They do not always know how to find new buyers nor how market demand is changing and which products are most profitable to grow. They lack the understanding to improve the prices they receive and the profitability of their production.

Your role as an extension advisor should be to help farmers become better informed about the market. They can then start to make decisions on how to improve their marketing. However, you must never tell farmers what they should do or what products to sell. Commercial decisions like these must be made by the farmers themselves. There are two reasons for this:

1. Farmers need to become owners of new ideas. In this way they become committed and aware that they are responsible for the success or failure of what they do. This increases the chances of a successful outcome.
2. If an extension officer (or NGO specialist) recommends a course of action that fails, he or she will be blamed by the farmers.

Extension workers should advise farmers of their different options, but they should never tell them what to do.

If things go wrong, farmers will be very angry.

When asked about their problems, farmers commonly identify marketing issues as their key constraint. Problems highlighted are usually lack of markets, poor prices, inadequate roads and poor communications.

However, while farmers can usually state clearly their problems they often face difficulties in identifying potential solutions. This guide aims to help you to help farmers work out what to do.

Farmers are generally highly skilled in agricultural techniques but marketing requires learning new skills, new techniques and new sources of information. Armed with business and marketing skills farmers will be better able to run their farms profitably.

Small-scale farmers face the biggest marketing problems. Box 1 compares the strengths and weaknesses of large-scale farms and small-scale farms. The conclusion from this box is that small farmers need the most support and that their success depends on getting the best prices possible. This can be done by obtaining better information about marketing and the different marketing options available to them.

Box 1

Strengths and weaknesses of small and large farms

Small farms

Strengths	*Weaknesses*
Cheap family labour is available. Smalls farms are suitable for labour-intensive products (e.g. those requiring transplanting, pruning and multiple harvests by hand).	Small farms produce only limited quantities.
Small farms can grow products that require attention to detail.	They are often located far away from major markets.
Small farms can effectively supply low-volume specialized niche markets and value-added products, such as herbs, flowers and ornamental plants. They can also supply local processors.	Education standards are often low. Small farmers are reluctant to introduce new technology.
	They face difficulties in obtaining information, capital and support.
	They are weak in negotiation and often lack confidence, especially when dealing with traders and companies.
	Small farmers tend to be averse to risk. They need income stability and cannot afford losses.

Large farms

Strengths	*Weaknesses*
Large farms are suitable for mechanized, large-scale production for major crops like wheat, sugar cane and maize.	Large farmers often have high overhead costs.
They can grow crops that require a large capital investment.	They can be poor at organizing and controlling large numbers of workers.
They are best equipped to produce and sell produce in large volumes to major buyers.	They cannot easily service small and niche markets.
They have access to capital, information and technology.	In some countries they may be criticized for using land that could be used by poor farmers.

WHAT IS THE ROLE OF MARKETING?

Marketing and the rural economy

Those who carry out marketing have a strong incentive to increase the value of rural trade, because increased sales should lead to higher profits. Rural businesses include suppliers of inputs, buyers of produce, transporters, storage companies, processors and wholesalers. They can range in size from individual entrepreneurs to large-scale agribusinesses, but whatever their size, all stand to gain from improvements in the marketing process.

Businesses are often said to be exploiting farmers and making unfair profits. They certainly try to maximize their profits, but without such businesses farmers would not be linked to markets and would not be able to sell all their produce. Traders and other rural businesses can help farmers find new markets and lower their costs. All of this leads to improved production opportunities and higher incomes for farmers.

Rural marketing businesses are often small, have limited resources and are traditional in outlook. Identifying new markets, advising on technologies and improving understanding of markets are all ways in which extension workers can help traders and farmers to increase sales.

Governments can help farmers in many ways, without actually working with them directly. Promotion of competition, provision of market information and improvement of market infrastructure are powerful ways to ensure good returns for farmers.

Marketing and consumers

Consumers want to pay low prices. Farmers want to receive high prices and to be paid as much of the consumer price as possible. The best way of achieving a balance between these two conflicting aims is through an efficient and low-cost marketing chain. This generally involves using larger scale transport (achieving economies of scale), reducing losses, and reducing other costs. An example of how costs can be reduced is the promotion of competition between buyers.

Consumer preferences for food products are constantly changing and developing, particularly in the case of horticultural products. Consumers need a production-marketing chain that can respond to their changing tastes. The marketing system needs to deliver the volumes, quality and variety of safe and nutritious food products that consumers require. It needs to be sufficiently dynamic so that it can continue to provide consumers with choice by developing and delivering new products.

Many farmers are blind to the requirements of the market.

Marketing extension lifts that blindfold.

2 Helping producers to farm profitably

Main points in Chapter 2

THE FACTORS THAT AFFECT PROFITABILITY

Extension officers should aim to help farmers farm more profitably; Improving price and profitability can have more impact on farmer incomes than increasing production.

PRICES AND PROFITS

More profitable production often involves greater risks. Farmers should aim at achieving a balance between profit and risk; Prices increase along the marketing chain to cover marketing costs and traders' profit; New products can be more profitable; Reducing marketing costs can have a major impact on profitability, as can controlling produce losses.

TRADERS PLAY A VITAL ROLE

Competition is essential; Long-term relationships between farmers and traders are usually the most profitable.

FACTORS AFFECTING PROFITABILITY

In the past, ministries of agriculture and even NGOs worked mainly on improving agricultural production and yields. This involved carrying out field trials, testing varieties and developing improved production techniques. The extension officer's primary role was to advise and encourage farmers to use improved production technologies.

Although farmers do, of course, benefit from improved yields, their primary concern must be to make a reasonable living from their farm. They need to generate sufficient profit from their sales to be able to cover their living costs. The key issue for them is how to do this.

The main role of the extension officers should therefore be to help farmers farm more profitably. To do this they must have a basic understanding of the factors that influence profits. These are farm gate or market prices, volumes sold and costs.

Table 1 shows how small changes in these three factors have an effect on a farmer's profit. Improving the price obtained and the quantity sold have a greater impact on profitability than does increasing production.

Table 1

The effect on profit of different levels of production, prices, sales and costs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	BASE SITUATION	**Yield (plus 10%)**	**One half marketed**	**Price (minus 10%)**	**Price (plus 10%)**	**100% sold**	**Marketing costs (minus 10%)**
Yield	10 000	**11 000**	10 000	10 000	10 000	10 000	10 000
Quantity sold (%)	80%	80%	**50%**	80%	80%	**100%**	80%
Quantity sold (kg)	8 000	8 800	5 000	8 000	8 000	10 000	8 000
Price per kg	5	5	5	**4.5**	**5.5**	5	5
Sales	40 000	44 000	25 000	36 000	44 000	50 000	40 000
Production costs	10 000	11 000	10 000	10 000	10 000	10 000	10 000
Marketing costs	16 000	17 600	10 000	16 000	16 000	20 000	**14 400**
Total	26 000	28 600	20 000	26 000	26 000	30 000	24 400
Margin	**14 000**	**15 400**	**5 000**	**10 000**	**18 000**	**20 000**	**15 600**
% of base situation		+ 10%	- 64%	-29%	+29%	+43%	+11%

Note: Costs for packaging, transport and commission are $2 per kg sold, except for column 7, where they are $1.80 per kg sold.

THE BASE SITUATION

(1) Summarizes costs and returns of a grower who produces 10 tonnes (10 000 kgs) of a product. Although 10 tonnes are produced, only 80% is sold. Sale price is $5 per kg. Production costs include cultivation, seed, fertilizer, any sprays and labour costs and are $10 000. Marketing costs (e.g. packaging, transport and commission) are $2 per kg sold. The farmer's total sales are $40 000, the costs are $26 000, leaving a margin of $14 000 to cover any fixed costs (rent, bank charges, salaries) and profit.

In the cases that follow (2 to 7) a single variable (in bold) has been altered, thus affecting the gross margin of each case

(2) Additional production inputs result in the yield being improved by 10%. Production costs are increased by $1 000 and marketing costs by $1 600 as additional production is marketed. Margin increases by $1 400 or 10%.

(3) Only half the production is sold (e.g. because of oversupply, a lack of buyers, poor demand). Margin falls dramatically to $5 000, or about a third of the typical profit in the Base Situation (down by 64%).

(4) Shows impact on profits when prices are 10% down. This will happen when there is low demand or oversupply. Profit margin falls by about a third (29%) to $10 000.

(5) Sets out the situation where prices are increased by 10%. This could happen when demand is high and/or supply is low. Profit increases by 29%, or by $4 000.

(6) All production is sold. This might be because the market linkages have been improved, because the farmer works harder at marketing or because of strong market demand. Profits improve by $6 000, or over 40%.

(7) Reflects the situation where 10% savings are made on marketing costs. Margin increases by 11%, or $1 600.

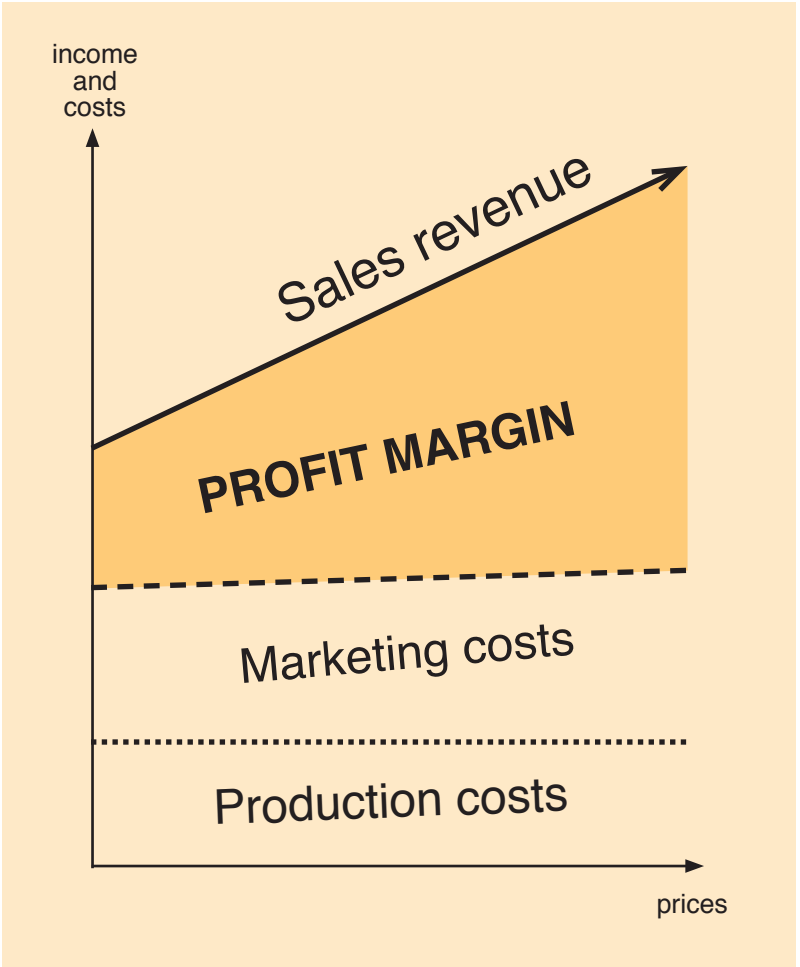
From Table 1 we can note several important points about profitability:

1. If farmers cannot sell all their production, potential profit goes down a lot. This highlights the danger of increasing production without being confident that the additional supply can be sold.

2. An increase in price has a significant effect on improving profit because production and marketing costs are generally fixed (unless a marketing commission is calculated as a percentage of the selling price). In the example in Table 1 a 10 percent increase in price lifted profit by nearly 30 percent. The opposite is true of low prices, where a small decline in price can lead to a large decline in profitability. This shows the importance of helping farmers to sell at high prices. Ways of doing this include growing crops that are in demand, producing better quality and negotiating more effectively with traders. The graph opposite shows the effect on profit of increased prices.

3. Marketing costs (e.g. marketing commissions, transport, packaging) can be greater than production costs, particularly in the case of horticultural crops. Marketing costs can often be reduced, leading to higher profitability.

Figure 1
The relationship between prices and farmer profit



PRICES AND PROFITS

Balancing risk and profit

High profits are closely linked to high risks. In agriculture, the enterprises that offer the possibility of the highest profit are usually the most risky. For example, if there is only a small demand for some products, such as flowers or some fruits, they can easily be oversupplied, leading to dramatic falls in price.

Some products may be technically difficult to produce or susceptible to pests and diseases. Farmers, and particularly poorer farmers, need to consider the importance of balancing production of potentially more profitable, but riskier, crops with those that provide a lower, but more stable and reliable income.

Enterprises that usually provide reliable incomes include staple crops (e.g. rice, potatoes, maize) and contract production for agricultural processors (e.g. cotton or sugar cane).

Farmer prices

The prices that farmers receive are mostly influenced by supply and demand. This is discussed in more detail in Chapter 3.

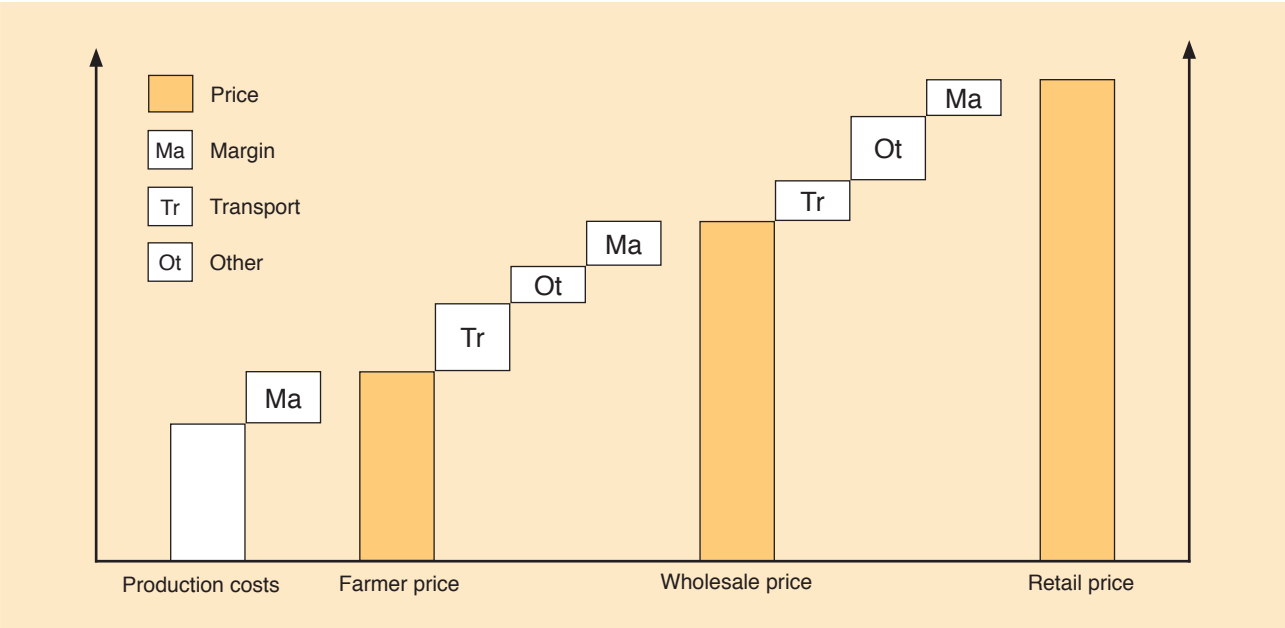
Other important factors affecting the price a farmer receives include:

- ***How much competition there is between buyers.*** When there is only one buyer, he or she will possibly offer a low "take it or leave it" price. Prices are likely to be higher and more profitable when there are many buyers competing with each other.
- ***The amount of information the farmer has.*** A farmer who is poorly informed of market prices and demand will be less able to negotiate with traders.
- ***The quality of the produce.*** Buyers will sometimes, but not always, offer higher prices to producers with better quality products. If most farmers produce low quality produce it is difficult for a trader to market high-quality produce separately.
- ***The transport costs.*** Lower prices are generally offered to producers whose product is costly to transport (e.g. from farms with small volumes; that are long distances from the market; or along poor roads).

Price increases along the marketing chain

As produce moves along the production-marketing chain, prices increase. Unit prices are lowest when farmers sell a standing crop. An example of this is when fruit growers sell their fruit on the tree to fruit contractors, who then harvest and pack it. This is common in Near East and South Asian countries. Harvested produce sold at the farm gate to rural buyers obtains a lower price than

Figure 2
Price increases along the marketing chain



produce sold at a local assembly market which, in turn, is sold at a lower price than produce sold at a wholesale market. Retail sales achieve the highest price. The price the farmer gets depends on the point in the marketing chain at which he or she decides to sell. Although prices are higher, selling further along the marketing chain involves additional costs for transport, market fees, meals and accommodation. There are also costs in terms of farmers' time. Farmers who take produce to market and sell directly to consumers will usually get the highest price but they do need to decide whether this is the best use of their time, as it may be more usefully spent managing the farm.

Identifying new products

Products sold in larger volumes, such as grains, may make low prices, but these prices are usually more stable. Such crops offer greater security but lower potential profits.

Products with an increasing demand offer good opportunities. The market is less likely to be oversupplied. Such products provide the opportunity for producers to expand their business as the market grows. The market for food in developing countries very often follows the same patterns of growth as have been experienced by developed countries. Examples are:

- urban consumers increasingly buy semi-prepared food (e.g. pre-packed salads or pre-cut vegetables) and processed food products;
- eating at fast-food restaurants becomes more popular and such restaurants become an important market for horticultural produce;
- snack products are increasingly eaten;
- retailing becomes more sophisticated and supermarkets start to take a larger share of sales.

New products and new markets provide opportunities for more rapid growth and more profitable production. For example, processors and supermarkets sometimes like to secure supply of crops by contracting farmers or intermediaries to supply them. These changes in the market for food lead to the development of new marketing channels, new buyers and a move away from more traditional assembly and wholesale markets.

Farmers' marketing costs

Marketing costs can be reduced, especially by achieving economies of scale. The larger the volume of product marketed, the greater the scope for lowering unit costs, for example through using larger vehicles or bulk-buying of packaging. Sometimes, traders operating on a commission basic will accept lower percentage commissions for large quantities. Small farmers working on their own are naturally at a disadvantage. Cost savings have sometimes been achieved by farmers working as a goup to jointly purchase inputs and hire transport.

Marketing costs and the trader

Traders also have costs. Because these are not always visible, traders are often accused of making unreasonable profits. Although traders can sometimes exploit a situation and make exceptional profits, there are also occasions when they are unable to sell products that they have purchased and therefore make losses. High profits on some occasions compensate for risks of losing money on others.

Product losses

Losses of products will inevitably occur during marketing and are one example of a marketing cost that is often invisible. Ways of handling horticultural produce to minimize losses are discussed in Chapter 8. Types of loss are:

Loss of weight. Produce can lose weight, mainly through water loss in storage, transport and marketing. A trader may buy a tonne of products, but as a result of water loss may only sell 975 kilos.

Figure 3
The impact of product losses

A trader buys 100 kg of tomatoes at $5 per kg, and has to throw 20 kg away, and sell another 20 kg at cost price because of loss of quality. Therefore the trader will have to make a profit on the sales of the remaining 60 kg.

Buying price 100 per kg x $5 per kg	=	$500
20kg thrown away	=	no income
20 kg sold at cost price (i.e. $5 per kg)	=	$100
Selling price for remaining 60 kg at $8.33 per kg	=	$500

The apparent profit margin is 66% [(sales price – buying price) ÷ buying price] × 100
[(8.33 – 5) ÷ 5] × 100 = 66%
The actual profit margin is 20% [(sales income – buying cost) ÷ buying cost] × 100
[(600 – 500) ÷ 500] × 100 = 20%

Loss of value over time. The fresher the product, the higher the price. Fresh produce will last longer, will probably taste better and may be more nutritious. Over time, bruises and pest damage become more apparent and water loss leads to many products starting to shrivel, all leading to losses in quality and in price. The most obvious loss occurs when produce has to be thrown away.

Physical losses. Fresh produce losses in developing countries can be exceptionally high. Losses of ten to thirty percent are often quoted. In practice, only on rare occasions is this volume of produce thrown away. These figures more accurately reflect the loss in value that occurs from the combination of moisture loss, damage, disease and loss of freshness, as well as the proportion of the harvest that is thrown away.

For a trader, minimizing losses is very important. Part of the difference between the consumer price and the price paid to the farmer is because the trader needs to make a large margin, to cover wasted or damaged produce. By only looking at the selling price it is easy to think that the trader is making an unfair profit. However, when losses are taken into account the picture changes (see Figure 3).

THE IMPORTANCE OF TRADERS

If traders consistently made "super profits", others would be attracted into buying and selling the same products. The competition between them would reduce their profits to more normal levels. But it is important to understand that traders do have to make a profit.

Traders. *It is often not understood how important traders are. Unless there were people who were prepared to buy farmers' produce, organize its distribution and find markets, farmers would not be able to make a living and consumers would not be fed. The more dynamic the trading sector and the greater the competition between traders, the greater will be the volume of produce taken out of rural areas and incomes returned to the farming community. Traders are therefore to be encouraged and supported, not criticised.*

Sustainability and long-term profit*. The most beneficial business relationships are long-term. Traders often conduct business with other traders with whom they have worked for years, or even generations. However, farmers are often tempted to neglect a long-term buyer because a new buyer offers slightly higher prices. This can be a risky policy. New buyers, as a tactic, will generally offer excellent prices initially in order to secure supply and market share. There is no guarantee that they will continue to pay more. New business relationships are much more likely to experience disputes.*

Long-term business relationships have the advantage of the trust and understanding that develops over the years. Business transactions are more likely to proceed smoothly. Such relationships can continue to provide long-term, profitable opportunities to producers from season to season and provide benefits to both parties.

For agricultural marketing arrangements to continue for a long time they need to be financially sustainable. Although there are likely to be periods when products are sold at a loss, a sustainable production-marketing chain is one in which all the businesses involved make a profit. They must all benefit from the trade. The long-term success of such an arrangement depends on how well all those involved work with one another.

Selling directly to consumers can mean higher prices ... but also greater risks

3 Supply and demand

Main points in Chapter 3

THE EFFECT OF SUPPLY AND DEMAND ON PRICES ...

Factors influencing supply and demand;
Short-term price fluctuations and their causes;
Long-term price changes;
Balance between supply and demand.

HORTICULTURAL MARKETS OPERATE IN A COMPLEX WAY ...

How do price changes affect supply?
How do price changes affect demand?
How do demand changes affect price?
What is the impact of income growth?

THERE ARE CHANGES IN MARKETING ARRANGEMENTS AS ECONOMIES DEVELOP

THE IMPACT OF SUPPLY AND DEMAND

Introduction

The quantity of produce that consumers want to purchase is affected by many factors, the most important being:

- price of the goods;
- tastes and preferences of the consumers;
- number of consumers;
- incomes of consumers;
- prices of competing produce;
- range of products available to consumers.

The quantity that producers supply is also affected by a number of factors, the most important being:

- price of the goods/products on the market;
- price of inputs/costs of production;
- technological factors;
- climate;
- storage possibilities.

The price of a product is mainly determined by supply and demand. Basically, a balance is achieved between what people are prepared to supply at a price and what people are willing to pay for the product. As the price

rises the quantity that will be supplied also rises and the quantity demanded falls, and vice versa. It is important to note that:

Supply is what producers are prepared to sell at a certain price

Demand is how much consumers are prepared to buy at the market price

While supply is influenced by production it is not always the same as production (e.g. farmers may sometimes grow perishable crops and not harvest them because the price is too low). For less perishable crops, farmers or traders may decide to store them in the hope that prices will rise, rather than sell them immediately. When prices do rise they may take the products out of store to sell. At this time supply is equal to production harvested for immediate sale plus products taken out of store.

However, it should be stressed that demand is not how much people would like to buy, nor what they should buy for a healthy lifestyle. It is what they are prepared to buy at the prevailing price.

Short-term price fluctuations

Unlike the prices of staple foods such as maize or rice, horticultural product prices fluctuate enormously. They can fluctuate from day to day and during the day, depending on supply and demand.

The main causes of short-term price changes of fresh produce are:

1. The amount of produce on sale in the market on a particular day and the quantities sold in the previous few days.

2. Short-term demand changes (e.g. holidays and festivals).

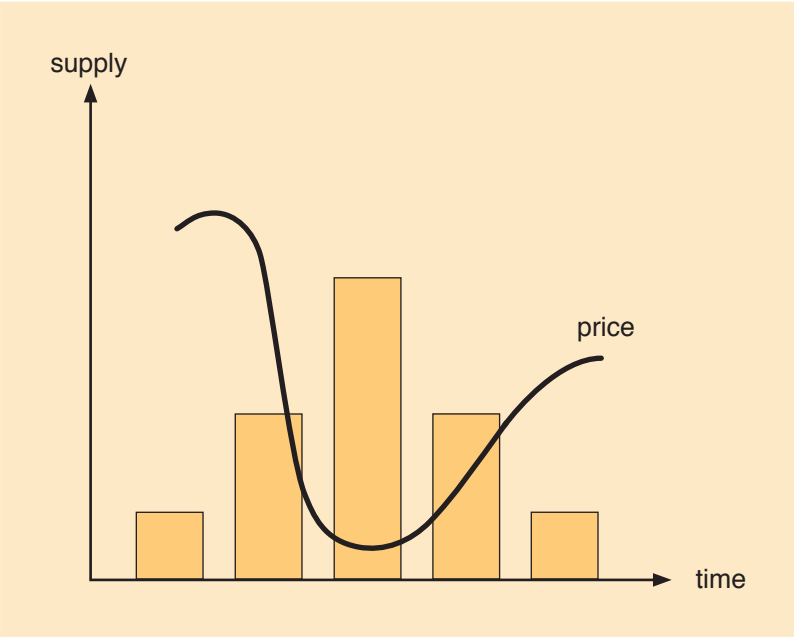
3. The effect on demand of prices of competing products.

To take advantage of opportunities when prices are high a supplier needs to be in close communication with the markets and able to transport produce rapidly. In many countries farmers are increasingly able to deliver products, such as leafy vegetables, to markets when prices are high, using mobile telephones to contact buyers.

Seasonal price changes

In countries with pronounced seasons, supplies are low at the start of the harvest season, so prices are high. Prices are at their lowest when the crop reaches maturity in the main production areas. At the end of the season prices normally increase again as supply diminishes. Prices are generally highest during the off-season, when only a small percentage of farmers are able to grow the crop. These considerations are illustrated in Figure 4.

Figure 4
Supply and price changes over a season



Farmers who are located in areas where early or late-season crop production is possible (for example, hill or mountain areas) or who can use production methods, such as plastic tunnels or greenhouses, that bring forward the harvesting date, are best placed to take advantage of high early or late-season prices.

Similarly, production under irrigation can supply crops in the off-season when prices are normally the highest.

R. Faidutti

Harvesting vegetables grown in greenhouses

M. Marzot

Irrigation of a potato field

Long-term price changes

Figure 5 shows how production and prices can fluctuate from year to year. The graph shows how a season of high prices and low supply is often followed by a season of low prices and high volumes. This is because many farmers individually make the same decision to expand production in response to high prices in one year. Wiser farmers often deliberately decide to do the opposite to what their neighbours are doing.

Figure 5

Fluctuations in price and production over several years

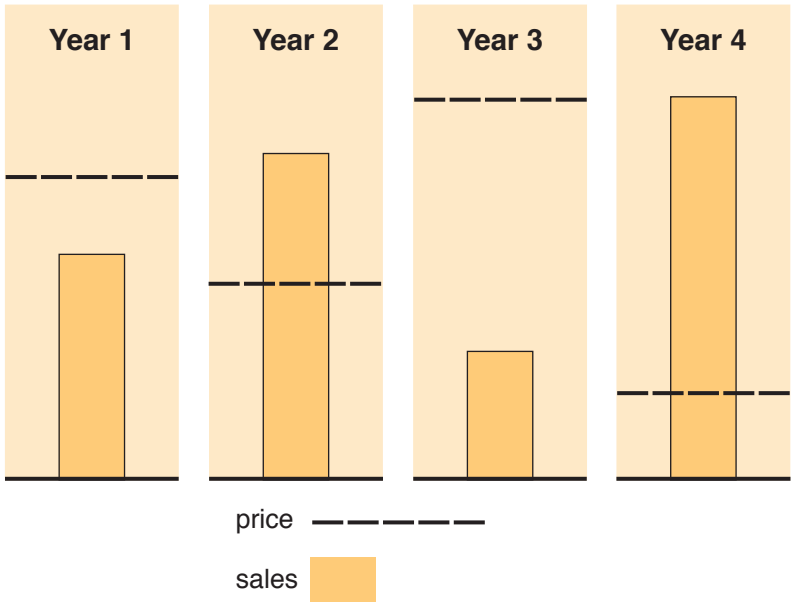
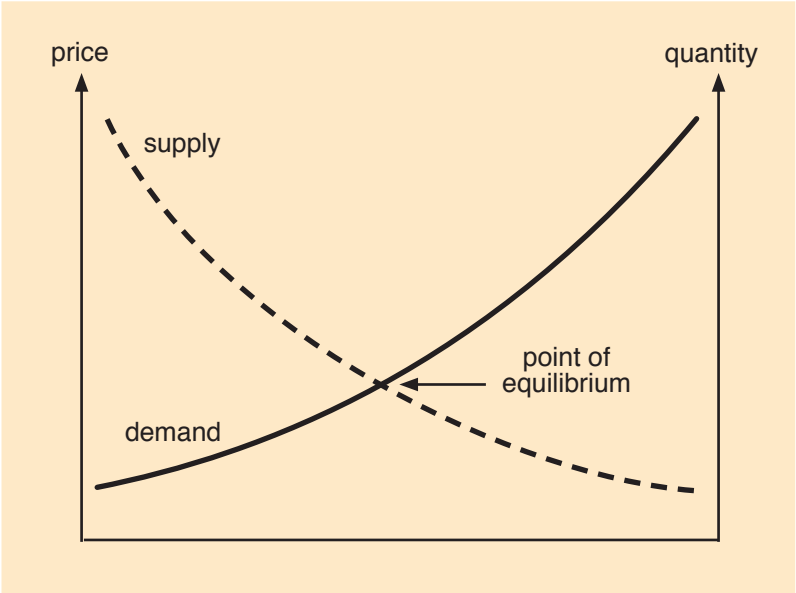


Figure 6

Long-term relationship between prices and demand



Long-term balance between supply and demand

Figure 6 shows that the lower the price, the greater will be the demand. However, as the price goes down less will eventually be supplied (because farmers will produce less). Conversely, the higher the price, the more will be supplied. The relationship between what people are prepared to buy and what farmers are prepared to grow at different prices should eventually lead to a balance between supply and demand.

The theoretical point at which supply and demand are in balance is referred to by economists as “equilibrium”. At this price there is enough incentive for farmers to produce the quantity that consumers will buy at that price. In practice, although the marketing chain tries to achieve this balance it is rarely done because there are so many factors affecting both supply and demand and because farmers lack adequate information about demand.

A BETTER UNDERSTANDING OF MARKETS

The way horticultural markets operate is complex. Markets are not very rational. Very often they appear to panic or overreact. If traders believe that there is a shortage of a product, prices will rise. Often, the increase is out of all proportion to any shortfall in supply. The converse is also true. If the market expects even a small oversupply, then prices fall rapidly.

The effect on supply of changes in price

High prices have a large effect on farmers’ profits (as shown in Table 1). In the short term a farmer’s response to high prices will be to try to increase the quantity of produce marketed. For example, tomato farmers may harvest green, unripe tomatoes. In the longer term the farmer will consider expanding the crop area and look for ways to increase production. In response to high prices farmers usually increase their production in the next season. As many of them make the same decision, there is a large increase in supply and oversupply occurs. Prices fall and farmers reduce production in the following season. This was illustrated in Figure 5.

The effect on demand of changes in price

When prices fall consumers increase their purchases. They buy less when prices rise. However, the response to price changes depends on the type of product. For example, increases in the price of staple foods eaten daily, such as maize, rice, roots and tubers or green bananas, have a relatively small effect on volumes of sales, as people still need to eat. Similarly, falls in price will not lead to major consumption increases. This is not the case with luxury or non-essential food items such as oranges and apples. Small falls in price can cause a disproportionately large increase in sales, while small price increases can lead to a big fall in sales.

Condiments, spices and other products that are used in small quantities are relatively insensitive to changes in

price. Low prices do little to increase sales as people do not change their recipes to use more spices when prices are low. This means that when products like garlic are in over-supply, prices fall dramatically, as consumers do not respond to price changes by buying more.

The effect on price of changes in demand

Consumer demand and tastes change constantly. Short-term changes can be caused by the weather. In northwest Europe, sunny days increase the demand for salad crops (tomatoes, lettuce, cucumbers) but when the weather becomes cooler vegetables for cooking are in stronger demand. This leads to short-term fluctuations in the prices of these commodities.

Longer-term changes in demand are caused by changes in taste, attitude and society. For example, perceived health benefits have led to long-term growth in the sales of broccoli (considered to be an anti-oxidant which is believed to reduce the risk of heart disease) and garlic (also considered to be good for the heart).

In Europe there has been a fall in the sale of fresh vegetables that need to be peeled and cooked (carrots, potatoes, etc.) and an increase in demand for semi-processed, cleaned, easier-to-prepare products such as frozen peas and carrots and frozen potato chips. This is because people are now reluctant to spend as much time cooking as they used to. Richer European consumers are often described as “cash rich-time poor”.

While prices of oranges have fallen, those of easy-peeling types of citrus have increased because consumers prefer the convenience of mandarins and clementines.

The effect of increasing income on sales

Food consumption patterns change as the amount of money that consumers have to spend increases.

1. Consumption of cereals barely increases as incomes improve.

2. Sales of milk products and beverages increase rapidly as incomes increase and, at higher income levels, these become the first and third most important expenditure categories.

3. Fruit sales increase most rapidly with increased income.

Information such as this helps to indicate the relative importance of specific products and identifies which products are likely to increase in sales as economies develop. Farmers in countries with growing economies need to be aware of these opportunities and extension workers need to have the knowledge to help them take advantage of the changes that are taking place.

RAPID CHANGES IN FOOD MARKETING ARRANGEMENTS ...

The way that food is marketed is changing rapidly.

In general, the changes reflect changes in society and lifestyle.

Among the most important trends are ...

- *A rapid growth in populations in towns and cities which, in turn, means longer and more sophisticated marketing channels;*
- *People have less time to prepare food (e.g. because both parents work) but more cash to spend on prepared foods;*
- *There has been a decline in families eating together at home and an increase in taking snacks and eating out, particularly at fast-food restaurants;*
- *There has been an increased use of refrigerators and deep freezers, enabling food to be stored for longer and allowing fewer but larger shopping trips, and an increased use of cars which enables large quantities to be carried.*

The changes in food marketing in developing countries tend to follow the pattern of change that has already been seen in developed countries. The speed of change is often much faster, particularly among the wealthier consumers. For example, between 1989 and 1997, richer Chinese consumers cut their consumption of grains by 15 percent, increased their meat consumption by nearly a half, doubled their egg consumption and tripled consumption of chicken and of vegetable oils. These changes took a century to happen in the West, but about a decade in P. R. China.

The overall trend in agricultural marketing has been the development of larger agribusinesses, the emergence of supermarket chains and the growth of trucking companies that can maintain cool chains. These companies are more sophisticated, demanding, professional and generally more powerful than traditional traders.

New ways of operating have to be developed by farmers if they are going to supply these new buyers. Traditionally, foodstuffs have been sold through wholesale markets where prices are determined on the day of sale. The growth in processing, agribusiness, supermarkets and international trade is leading to an expansion in long-term supply arrangements and a movement away from 'spot markets'. Processors and supermarkets need to ensure that they will receive guaranteed supplies of produce in the volume and quality they require and at the time they require them. This involves production planning and forward contracts. To work with such buyers it is normally necessary for small farmers to form themselves into official or unofficial groups and be prepared to supply on the basis of contracts. NGOs, in particular, are playing an increasingly important role in linking farmers to markets in this way.

Supermarkets offer a pleasant, convenient and hygienic environment in which to shop.

To supply them, farmers will need to re-organize their production and marketing practices.

CASE STUDIES OF SUCCESSFUL MARKETING EXTENSION

Case study 1

Market research on agro-tourism linkages on a Caribbean island

Farmers on a holiday island in the Caribbean were not supplying the tourist industry. A study showed that crops such as cabbages, carrots, okra, peppers and sweet potatoes were being grown. Production was inconsistent due to the lack of irrigation, climatic conditions and pests. Market research with hotels and restaurants identified a demand for fresh fruits and salads, and buyers indicated a preference for the more perishable local crops. These findings were communicated at a series of farmer meetings.

Action. After the meetings farmers immediately started to grow melons to supply the tourist industry. Lettuce growers formed themselves into an association and the Ministry of Agriculture agreed to work with them on small-scale field trials of varieties that could grow during the hot summer months. The Ministry provided the lettuce growers' association with an estimate of total lettuce demand. This could be converted into a weekly planting programme, so that the growers could work together to schedule production to meet demand.

Six growers formed themselves into an association to grow a range of vegetable crops according to a production programme agreed with one of the island's wholesalers. In order to provide the consistency of supply demanded by the tourist industry, the Ministry started working with selected growers to develop intensive production systems, such as drip irrigation and shade houses, so they were able to produce high-quality products reliably throughout the year.

Main points

1. Farmers reorganized production to supply specific crops;
2. Farmer groups found that by programming production they could supply the market, carry out contract production at regular prices and reduce imports of specific crops;
3. The tourist trade appreciated the fresher local produce but needed regular supplies;
4. Changes were needed in production techniques to provide the market with what it required in terms of quality and continuity of supply.

Lessons. *Extension officers and farmers often feel intimidated by markets and feel inhibited in talking directly to traders and other buyers. Marketing research is not only vital to understand what the market wants, but is also extremely effective at enabling farmers and extension officers to build up their own knowledge of the market. They start to feel comfortable with dealing directly with buyers.*

Case study 2

Market research by women producers, Bangladesh

A group of women producers wanted to diversify into new profitable products, especially those suited to the landless among them. At a preliminary meeting to discuss resources, a short list of four products was selected: (i) bamboo baskets, (ii) potato crisps/chips, (iii) rice cakes, (iv) embroidered blouses. The women believed that embroidered blouses would offer the best opportunity. After learning about market research, four of the women decided to research the local town market and report back to the group.

Action. Two marketing specialists and two extension officers accompanied the women to the market, gave them some training in market research and a checklist of questions. Two groups were formed. Initially the specialists led the market research interviewing. After the first two interviews, the women farmers led the interview process. Then the two groups met to discuss their findings and agreed on the next steps.

Decision. The market research found that there was a small and slow market for bamboo baskets, the potato crisp market was dominated by large-scale processors and the market for embroidered blouses was seasonal and difficult. However, there was an excellent opportunity to supply rice cakes. These were currently being supplied from a town two hours away and the women already had the skills and resources to produce high quality rice cakes. The retailers selling this product were enthusiastic about being able to buy locally produced rice cakes. At the next farmers' meeting the women presented their findings.The group agreed to produce samples of rice cakes and take them to the retailers during the following week.

Main points

1. Market research by rural people identified local buyers and a demand for rice cakes and eliminated the other possible products. This illustrates that researching the market and communicating findings to rural people is a powerful marketing extension tool.
2. The producers were quickly able to do their own market research, after being trained in the process and observing it in the market.
3. The development of the opportunity involved: (i) the initial meeting, (ii) market research in the town, (iii) a second meeting when the findings were presented, and (iv) a test marketing.

Lessons. *The women had been nervous about going into the market. However, they were supported by one another and helped by the local extension officers and government marketing specialists.*

Case study 3

Establishing new village markets, Madhya Pradesh, India

Evidence suggests that villages with over 5 000 people can always sustain a haat (village market) and that 50 percent of villages of over 2 000 have a weekly market. Research showed that an area 25 kilometres across, containing 25 villages and with a collective population of 15 000, did not have any haats. Villagers had to travel a full day to buy their essential products.

Action. Specialists from a local project discussed the idea of establishing a haat with village groups. It was agreed that the main centre (Kalda village) of all the villages was best located. A committee of twelve was formed to develop the haat there.

Decision. A site of one acre (4 000 m^2) was selected in the village. It had trees for shade and good access to the road. It was agreed to start a weekly haat on a specific date. The site was cleared and levelled. Stallholder fees were agreed. Committee members went to surrounding villages to advertise and promote the new haat.

Implementation. At the first haat 85 stalls were put up, 3 000 buyers attended and total sales of over $3 000 were made. The haats take place every week. The number of stalls has increased to 125 and market turnover in 2004 reached over $4 500 per week.

Main points

1. Research had shown that there was a shortage of village markets in the area and that there was a demand from both consumers and producers for a local market.
2. The idea of establishing a village market received support, and consensus was reached on its location.
3. Prior to starting the haat it was properly promoted to ensure support from the beginning.
4. Once the market established itself sales increased, creating market opportunities for farmers and providing consumers with their needs.
5. It is important to ensure that the timing of a new market does not clash with market days in nearby villages, or traders will not visit a new market.

Case study 4

Banana post-harvest treatment, Africa

Locally produced bananas were sold in bunches to retailers.
They were green, with brown bruises and often infected with a fungus
that shortened their shelf life and made them look unattractive.
Market research showed that some imported bananas were being sold.
These were well-coloured and relatively bruise free.
They were being sold at premium prices.
A local trader believed that there was potential for introducing
an improved post-harvest system so that a better quality banana could be sold.

Action. The trader started by working with the banana growers in one village. He agreed to collect their bunches of bananas on one specific day of the week. A lorry was hired and he lined it with straw. He purchased the bunches and took them to a shed where he then de-handed them, washed them in diluted detergent, treated them with ethylene (to ripen and give a strong yellow skin colour), graded the hands and transported them in recyclable plastic crates.

He tested the market. Initially the retailers were reluctant to buy the bright, yellow, high-quality bananas, because of their higher cost. Within a week some retailers had purchased small quantities and found that their customers were enthusiastic and were prepared to buy the bananas at higher prices. Soon the market had learned that high-quality, higher-priced bananas would outsell poor-quality bananas.

The next problem was to supply the increased demand. Meetings were arranged between the growers and the traders with assistance from local extension officers. A regular buying route was set up and a firm price agreed. Sales reached 1.5 tonnes a day.

Main points

1. The market research suggested that consumers would be prepared to pay higher prices for better quality bananas.
2. This was proven by test marketing small quantities of treated and graded bananas.
3. To supply the increased demand, arrangements were set up to buy regularly from growers.
4. Volumes increased as farmers responded to the regular income.

Lessons. *In this case the trader was pro-active because he believed he could build a profitable business. The extension officer played an important role in helping to create the linkages between the trader and the banana growers.*

Case study 5

Tomatoes grown by an irrigation scheme, South Africa
Introducing a new crop

An NGO was working with farmers at an irrigation scheme in Masinga, KwaZulu-Natal.
The objective was to increase farmers' incomes.
Their focus was to improve profitability by growing what the market demanded.
The NGO carried out market research, which identified a strong demand
in the Indian communities of Durban for plum tomatoes (processing types).
Also, to purchase the required plum tomatoes traders had to make long trips.
A survey in the area found that only the traditional round type of tomatoes were grown.

Decision. As plum tomatoes had not been grown in the area before, the first stage was to carry out field trials. These lasted four months, the duration of the crop. Crop recommendations were drawn up for both winter and summer crops. A plan was devised to build up the production of tomatoes.

Action. A nursery was established to raise seedlings for plum tomatoes to be sold in Durban. However, strong demand was identified in the nearest town (Greytown) and sales were built up to the level of about 80 tonnes a week from 170 growers, with average prices of R1.40 per kg. The crop gave a much higher yield (average 60 tonne per hectare) and was cheaper to grow as it did not require staking. Average sales were R84 000 per hectare. Farmer net income from 0.1 ha was about R2 000, compared with previous average net income of only R500.

If sales were over 80 tonnes per week then the price in Greytown market fell to only R1 per kg. In order to expand sales and further increase farmer incomes the NGO helped the growers to access the Durban market.

Main points

1. Market research revealed the market opportunity.
2. Field trials had to prove that the crop could be grown successfully.
3. Sales were built up slowly.
4. Market prices were monitored and new markets added if supply exceeded demand.

Case study 6

Production of tomatoes working with a processor

Running a successful processing operation requires a steady supply of raw material. Processing time needs to be maximized so that the expensive equipment is used to the fullest. Processors generally want to purchase large quantities of produce. However, their buying prices are usually lower than in the open market. One of the major difficulties when working with contracted farmers is side selling, (i.e. when growers sell to the fresh markets when the prices are higher). A tomato processing factory had tried to involve small local farmers in tomato production by providing seeds, fertilizer and agro-chemicals but had been disappointed because the farmers had sold their crops through the local wholesale market and the factory had been unable to even recover the advances made.

Decision. New management took over the processing factory. They decided that it needed to source its raw materials from the surrounding small-scale farmers. However, it needed to have a strategy to overcome the attractions of the higher priced local market for fresh tomatoes. After holding farmer meetings the company's approach was to provide training, technical support, hybrid seeds and other inputs to twelve farmers with 5 ha each. The aim was to sufficiently raise yields so that the farmers had to sell most of their crop to the processing factory.

Action. Yields of 150 tonnes per hectare were achieved, providing a total production of 9,000 tonnes. In the following year the area under production doubled.

When the farmers understood the technology and started to generate sufficient cash to pay for their inputs, the processing factory no longer needed to provide credit or technical support. The growers supplied both the local market and the factory.

Main points

1. Processing factories do offer the possibility of a reliable demand, but prices are generally lower than on the fresh market, except in times of glut (a saturated market).
2. Contract production is useful in that it stabilizes income.
3. In this case the processing company took a bold decision to cover input and advice costs so that it could be assured that there was sufficient produce to supply the factory and the local fresh market.

Case study 7

Sharing transport to fully exploit market opportunities, Al Bayda, Yemen

Onions have traditionally been supplied from the Tihama Plain. However, a farmer had experimentally introduced onions near Al Bayda. They proved ideally suited to the area and excellent yields were achieved. Quality was good and harvesting was possible throughout the year. All the growers in the area took up onion production and transported the onions in one-tonne pick-up trucks to the distant city markets.

Decision. The growers had a comparative advantage in onion production. The challenge was to exploit this advantage. All the growers belonged to the same tribe and the tribal chief was encouraged to play a leading role in organizing them. They agreed to hire eight-tonne lorries, which reduced their transport costs from 0.5 Yemeni Rials per kg when using pick-ups to 0.2 Rials per kg. The growers co-ordinated their production and grew a range of varieties with different shelf lives in order to achieve a smooth supply of onions throughout the year.

Action. The farmers never sent more than one lorry to each of the main markets at one time. This ensured that they did not oversupply the market. Instead of selling via wholesalers the grower representative would sell the onions off the back of the lorry by the bag direct to retailers.

Main points

1. This approach to marketing (i.e. collective transport and direct sales), improved grower returns by over 40 percent.
2. The tribal chief imposed the necessary collectivism and discipline in terms of varieties grown, programming of production and trusting the farmer representative who undertook the selling on behalf of all the farmers.
3. The growers had sufficient comparative advantage and market strength to sell direct rather than through the normal wholesaler system. Initially they could afford to offer onions at lower prices than wholesalers to attract custom.
4. The farmers kept themselves well informed about the market by an information network, which included radio, telephone messages to the nearest town and messengers, so that further truck-loads were dispatched when market supplies were getting low.

Case study 8

Farmer group marketing

A project planned to lift rural incomes by improving farmer marketing. A resource audit had shown that farmers sold small quantities of produce to individual traders who, in turn, sold to the wholesalers in town. Market research with the wholesalers identified that they were prepared to buy directly from farmers, provided the farmers could fill a complete lorry of eight tonnes. They agreed to pay the same price that traders would get for delivering direct to the wholesalers' warehouses in town.

Decision. The marketing specialist and local extension officer discussed this business idea with the local community and a plan was agreed. The farmers formed a group with a chairman, treasurer and salesman. They were provided with basic business training, that is bookkeeping, negotiation skills and the contacts of the wholesalers in town.

Action. The farmers negotiated with the wholesalers and selected the one who offered the best contract terms. During the harvesting season the farmers organized to bring in their produce to a central assembly point. The wholesaler's truck was called in. The direct sale enabled farmers to get better prices and the farmer group was confident enough to buy some produce from farmers outside the group. A portion of the margin was held back by the group to set up a small office and invest in some community facilities. The next season farmers increased their production and this successful arrangement attracted additional suppliers from growers outside the group.

Main points

1. The activities were based on an understanding of what the farmers produced, what the market wanted to buy and how it operated.
2. The farmers collectively realized that by working together they could miss out one link in the marketing chain, obtain higher prices and take greater control over their financial future.
3. The farmers took on additional skills. For the first season they were supported by a marketing specialist and their extension officer.
4. In the following seasons the farmers were able to further develop their business on their own.

Lessons. *The key issue for the farmers was to be able to bulk together their produce to have sufficient quantity to fill the wholesalers' lorries.*

Case study 9

Inward buyer mission, Mozambique

The local market for pigeon peas had very little demand.
Farmers needed additional markets for their produce if incomes were to be increased.
Studies showed that pigeon peas were an important crop in parts of the country.
Market research with local wholesalers suggested there might be export opportunities to India, as the season in Mozambique is not the same as that in India.
Trade statistics showed that India imported substantial volumes of pigeon peas.
Market research was carried out in Mumbai (Bombay) with pulse importers.
They were enthusiastic about obtaining supplies from Mozambique in the following season.

Action. Using international aid funds, an inward buyer mission of pulse importers was organized. They negotiated with Mozambican wholesalers to purchase some 3 000 tonnes. During the next two seasons there was relatively little pigeon pea exported, because of increased production in India. However, one of the importers, who had his own processing operation in India, realized that his exports of processed pigeon peas (dhal) to the USA had to pay a high import duty. Dhal exports from Mozambique would be duty free. He built a dhal processing plant in Mozambique and contracted production with small farmers.

Main points

1. Market research identified external markets;
2. Buyers were brought in to negotiate with local traders;
3. The trade did not progress smoothly;
4. What started as an export operation developed into foreign investment in processing facilities.

Lessons. *This case shows how market research can be used to identify an opportunity in an export market. Export sales have the advantage of not only supplying a new market, but also of earning foreign exchange for the country. Inward buyer missions (bringing buyers to the farmers), are usually more successful than outward seller missions (where the producers visit potential buyers), particularly where exporting is concerned. The buyers need to be assured that their suppliers are able to deliver as promised and this assurance is best obtained by visiting the farmers.*

Case study 10

Marketing extension training in South Africa

Agriculture was traditionally based on large, commercial, white-owned farms with marketing through marketing boards. Under the new Government, marketing boards have been disbanded and the development of black farmers encouraged. Research by the Department of Agriculture concluded that development of the black farmers would be dependent on their access to markets. FAO was asked to carry out a joint project to train extension staff in marketing. It was agreed that the project should be aimed at training agricultural extension officers in marketing and in the commercial opportunities available to small-scale farmers, so that they could better advise their new clients.

Action. A group of specialists was identified, covering the main enterprises (i.e. livestock, poultry, wool, grains, horticulture, pigs and dairy), as well as the topics of marketing and marketing extension. The scope and range of topics that needed to be covered was agreed. The trainers gave a presentation to representatives from the national Department of Agriculture and the nine provincial Departments of Agriculture. Consensus was reached on the topics and approach of the training courses.

The trainers prepared training materials, computer presentations and visual aids (including posters, cartoons and photographs). The training materials covered each of the main agricultural enterprises and provided information on how the individual products were marketed, the market opportunities and quality standards. The trainers made suggestions as to how small-scale emerging farmers could access the markets. The emphasis was on what marketing knowledge the extension officer needed to have and what could be done to improve farmers' marketing. Three five-day training courses were organized. At each, three provinces sent ten representatives from their extension departments. These included a senior manager, a training specialist and experienced extensionists.

Training. The training courses were designed so that participants' knowledge of markets, marketing and commercial opportunities developed over the five-day course.

The **first day** concentrated on providing an overview of marketing and how marketing had changed. It also included presentations by staff from each province on the agricultural and marketing situation in their province, an exercise that forced participants to think about the marketing situation in advance of the workshop.

The **next two days** concentrated on the various agricultural enterprises. Enterprise specialists led seminars on the products, using the training materials they had prepared.

The **last day** included a number of participative exercises, such as role play, presentations by the individual provinces on what they had learned and field trips. Each day the participants had to fill in feedback questionnaires. The course could then be modified immediately and the training materials adapted in the light of trainees' reactions.

Outcome. One of the most important lessons learned was that passing on information about marketing was not sufficient. Trainees wanted to participate. Valuable lessons were learned by sharing field experiences. Field trips and practical exercises (e.g. graph reading exercises, calculating gross margins) were highly appreciated. Trainees enjoyed the opportunity of being able to present the existing marketing situation in their own province and discussing what they aimed to achieve when they returned.

After the initial training courses, the training materials were modified and printed and all the presentations consolidated on CD-ROMs. Materials were made available to all extension officers. These were used as the core of each province's own marketing training courses. The participants of the initial training course gave other extension officers training courses. They, in turn, gave marketing courses, albeit in a simplified and shorter form, to the farmers in their area.

Main points

After one year, provincial agricultural departments gathered together to provide feedback on the impact of the course with the following results.

1. The marketing training courses responded to a need both of extension officers and of farmers to be more alert to commercial opportunities.
2. The courses provided important basic information, an understanding of how markets worked, a clear idea of the expertise and knowledge that extension officers needed to have, and the activities that they might be able to carry out.
3. The training materials provided information for the provinces to build their marketing expertise. Particularly appreciated was the listing of contacts, addresses and information sources, so that extension officers could source specialist information and create linkages between their farmers and the agri-business sector.
4. Farmers explained how extension officers' new marketing expertise and understanding had improved their financial situation. Examples included trade introductions, contract production, supplying supermarkets directly and transport sharing.

Lessons. *The main lessons from these courses were that trainees wanted to be able to participate. They were enthusiastic about field trips. They wanted to see markets functioning and to be able to talk to traders. A successful technique is to have an experienced marketing specialist carry out a demonstration interview of a trader in front of the trainees. Role play proved to be an excellent method of enabling trainees to practice information gathering.*

4 Marketing extension

Main points in Chapter 4

ACTIVITIES TO HELP FARMERS INCREASE PROFITABILITY

Selecting profitable crops;
Increasing sales by improving access to buyers and markets;
Reducing costs;
Reducing post-harvest losses.

INFORMATION NEEDED TO GIVE FARMERS RELIABLE ADVICE

The farming area;
The crops grown and the costs of producing them;
The market and those involved in supplying it

GATHERING THAT INFORMATION

Using questionnaires and interviews to get information from farmers and traders;
Analysing the results.

MARKETING EXTENSION TASKS

Working with farmers, your main marketing task should be to provide them with the necessary information and contacts to allow them to increase their earnings through better marketing.

This involves helping them to:

- select profitable crops and improve production techniques;
- improve sales and achieve better prices;
- reduce costs and losses.

Crop selection and production techniques
You need to know which crops generate better profits and how production choices, such as variety, production timing and product quality, can affect the profitability of individual crops. To do this you must know the products produced in your area and how they are marketed.

This information can be gathered by talking to farmers and traders individually or by meeting with them as a group. Individual interviews make it easier to gather confidential commercial information. They also make it easier for less confident farmers and those with lower status to express

their views. On the other hand, gathering information from a group of farmers (say from 5 to 15) is effective and also very useful in helping farmers to understand their own problems and opportunities.

In the majority of cases your work will involve you in finding ways of improving the marketing of existing products. However, there may be the opportunity for farmers to diversify into new products and you also need to be in a position to identify market opportunities for these.

It is essential for farmers to know where and how they will sell their products before they start to grow them.

Improve sales and achieve better prices

From speaking to farmers, you should be able to learn what they consider to be their main marketing problems and what ideas they have for solving those problems.

You can improve farmers' sales by working with them to improve their access to buyers and markets and by helping them to understand which products have expanding demand. You also need to know the expected prices for products and how prices change during the season. This will help farmers negotiate better prices by being better informed.

Improving sales and prices requires an understanding of the market. At a local level, this comes from talking to buyers, traders and transporters. Initially, you may be nervous about talking to business people. However, traders generally enjoy talking about their business and become very helpful if they feel this assistance will eventually lead to an increase in their turnover.

Carrying out market research in this way is a powerful tool for improving marketing. Once you start talking directly to the trade and understand how the market works, you can realize how valuable this information is to farmers and how much better equipped you are to help them.

With some support and help, farmers can also carry out their own market research (see Case study 2). Once they have been helped to start finding out about the

market for themselves they gain confidence and quickly feel able to do the work on their own. A farmer group can select between four and six farmers to carry out market research. You can advise them on interviewing techniques, provide them with checklists of questions in their own language and let them observe you doing market research interviews.

Reducing costs and losses

You need to be aware of typical marketing costs (e.g. for transport and packaging) and work with farmers to reduce those costs, such as by encouraging them to share transport or buy inputs in bulk. Good post-harvest advice can help improve quality and reduce wastage – both factors affect profit (see Chapter 8).

P. Lowrey

Women farmers sharing transport in Zambia

INFORMATION NEEDED TO HELP FARMERS

The farming area

You need to find out the strengths and weaknesses of your area. This includes identifying:

- major crops grown, when they are harvested (crop calendars could be developed, as illustrated in Figure 7) and their particular characteristics;
- costs of producing these crops;
- typical prices that farmers receive, how the prices change depending on buyer and time and what premiums for quality are given, if any;
- farmers' skills and their problems;
- businesses that transport, store, process and pack agricultural products;
- relative importance of the different local markets and traders;
- levels of existing trade and the possibility of growth;
- leaders in the farming community;
- assistance that farmers believe they require to help them market their products.

The purpose of gathering this information is for you to thoroughly familiarize yourself with both the problems and the opportunities of your area. It is very important to

speak to farmers. In particular you must ensure that you meet medium- and small-scale farmers and not just large farmers. Farmers generally have a good understanding of their problems and are delighted to have an opportunity to talk. At this stage your role is to listen and learn. You should try to understand how they might react to new ideas and which farmers are likely to be most receptive to the idea of trying out new activities.

At the end of this information gathering you should have a clear idea of the crops, the marketing system, the individuals and the problems of the area. You should also have some idea of possible solutions that are worth investigating.

The market

Market research requires two main activities: firstly, finding out about how the market works and, secondly, finding out what products the market demands.

Finding out about how the market works involves understanding:

- the channels through which products pass;
- who the important people and companies are;
- how they do their business and who they currently buy from;
- their interest in trading with farmers from your area;
- who they sell to.

Finding out what products the market demands involves understanding:

- **Product** specifications, varieties, colour, size, grade, quality and packing;
- **Prices**, price patterns, variations according to season, quality and supply;
- **Supply**, volumes, competing suppliers and seasonality;
- **Preferences** of customers and consumers;
- **Opportunities** for additional production to be marketed.

GATHERING INFORMATION

Interviews must be held with a cross-section of the farming community and with the small local businesses that are involved in agricultural marketing.

Gathering information about the market involves talking to the important businesses in the marketing chain, such as buyers who travel from farm to farm, transporters, other traders, wholesalers, processors, retailers, exporters

and, less often, importers and even consumers. It should involve visiting local retail and assembly markets and, if applicable, major wholesale markets.

When interviewing traders and others it is essential to leave sensitive questions until you have the interviewee's confidence

Interviews should be carried out face-to-face but, when long distances are involved, telephone interviewing could be used if the people being interviewed are willing to cooperate over the phone.

Preparation and use of questionnaires

To help gather information in a systematic way and to ensure that all the important questions are asked, it is useful to have a questionnaire or, at least, a checklist of questions. Examples of questionnaires for farmers and for traders can be found in Annexes 1 and 2 at the end of this Guide. The following paragraphs briefly describe these questionnaires.

Farmer questionnaire. The first part covers questions to the farmer about the farm business and concentrates on gathering basic data needed. It asks such questions as how large the farm is, whether it has irrigation and what equipment the farmer has. It asks what major crops are grown, which ones are marketed and which are mainly for home consumption, Finally, it examines how the selling is normally done and asks what the farmer's major problems are.

The second part of the questionnaire concentrates on individual products, with questions on yields, costs, prices, packaging, transport and marketing arrangements. All of this is important information needed to build up knowledge about the crops and other agricultural products and to be able to calculate the costs and possible returns. It is not advisable to gather detailed production data on more than two products from each grower, as the process of data collecting can be very time consuming.

Trader questionnaire. The first part of the questionnaire in Annex 2 covers questions to the trader about his or her business. The second part covers the most important agricultural products traded by that trader. It is not advisable to gather detailed data on more than two products per trader.

Practice using the questionnaire

The most difficult part of carrying out an interview programme is the first interview. For example, you may feel nervous about talking directly to the private sector. It helps to have tested the questionnaire before starting the full interview programme. This will establish whether the wording of questions need to be changed and give you a chance to practice. Interviewing a small-scale farmer or a shopkeeper is a good way to start. It helps you to become comfortable with the process and to gain skills in interviewing.

Conducting the interviews

When interviewing a group of farmers it is important to be well organized. Normally it is necessary to visit or send a message in advance, at least a day before, to arrange for the farmers' group to meet you at a specific place and time. You should speak to the farmers as a group to:

- explain the purpose of the survey;
- ask the farmers to outline the main crops that they grow and the problems they are experiencing.

When the meeting is finished you should thank the group and ask them if there are any additional points that they want to make, especially farmers who have not previously spoken.

When interviewing agribusinesses, traders and retailers the process is similar except that they are generally contacted and spoken to individually. This interviewing process involves:

- introducing yourself;
- explaining at the beginning why gathering the information is important (i.e. future plans must be based on a clear understanding of the market) and that this should be to the long-term advantage of the person being interviewed;
- explaining how much time it will take;
- starting by making the interviewees comfortable, often by encouraging them to explain how they started and developed their business;
- asking the non-controversial questions first;
- keeping sensitive questions until towards the end of the interview;
- sharing information to encourage the interviewees to exchange their knowledge. For example, you could tell them about the production potential of farmers in your area;
- confirming the answer if there is any doubt as to what the person being interviewed means;
- writing down as much as possible on the questionnaire form while the interviewee is talking;
- thanking interviewees for their time, ideas and help;
- writing up the questionnaire properly and reading it to ensure your full understanding of what was said;
- interviewing a wide selection of farmers, traders and businessmen to be able to gather the ideas and opinions of a wide range of people.

Analysing the findings.
Interview findings should be written up, in note form, as soon as possible. Use a table to compile the quantitative data. Let the data and the interview findings build up a picture of the farming sector and the rural resources. This should cover:

- the farm sizes and incomes;
- the products they produce;
- how farmers market their products;
- the important local agribusinesses supplying inputs and those involved in crop marketing;
- the differences in crops, markets and income between areas;
- typical costs of production and incomes for the main crops;
- farmers' problems, the solutions that they would like to see and the opportunities for developing the commercial aspects of their farming businesses.

For the **major products** that you ask questions about, you can learn:

- typical volumes and values of product sold;
- quality preference in terms of variety, appearance, size, taste, packing, grading;
- post-harvest practices, shelf life, storage opportunities;
- differences in demand according to time of year, day of the week and whether influenced by festivals such as Diwali, Christmas, Lunar New Year or Ramadan;
- other competing suppliers, their quality, seasonality and price characteristics;
- trends in consumer demand and opportunities for additional supplies;
- typical prices and marketing costs.

As a result of conducting interviews you should have an understanding of the marketing chain and then be able to advise farmers on:

- the different marketing channels for major products and their relative importance;
- who the important businesses involved in agricultural marketing are and how/where they can be contacted;
- the different companies that growers can work with, how they like to do business with farmers and their trading and business interests;
- the likely costs of marketing, including transport, packaging, storage and commission charges;
- prices and how and why they change.

5 Helping farmers to understand the market

Main points in Chapter 5

TECHNIQUES FOR COMMUNICATING WITH FARMERS ABOUT MARKETS

Some of these are ...

Crop calendars to show seasonality;

Calculating costs of production;

Maps showing location of production;

Diagrams to describe the marketing channels;

Providing information about traders;

Price trends over the year;

Helping farmers to understand their marketing problems;

Information about demand for different products.

GETTING THE MESSAGE ACROSS TO FARMERS

Talking directly to farmers, traders and others makes it possible to gather information needed to improve agricultural marketing. Knowledge of the range of products produced, seasonality of crops and approximate costs of production can help farmers to understand their marketing possibilities and thus increase farm income. This first requires a careful analysis of the collected information and then an effective method of presentation of that information to farmers.

Discussions with groups of farmers can be conducted using information presented on boards or flip charts.Some of the information that can be presented is listed under “Main points in Chapter 5”. These are briefly described below.

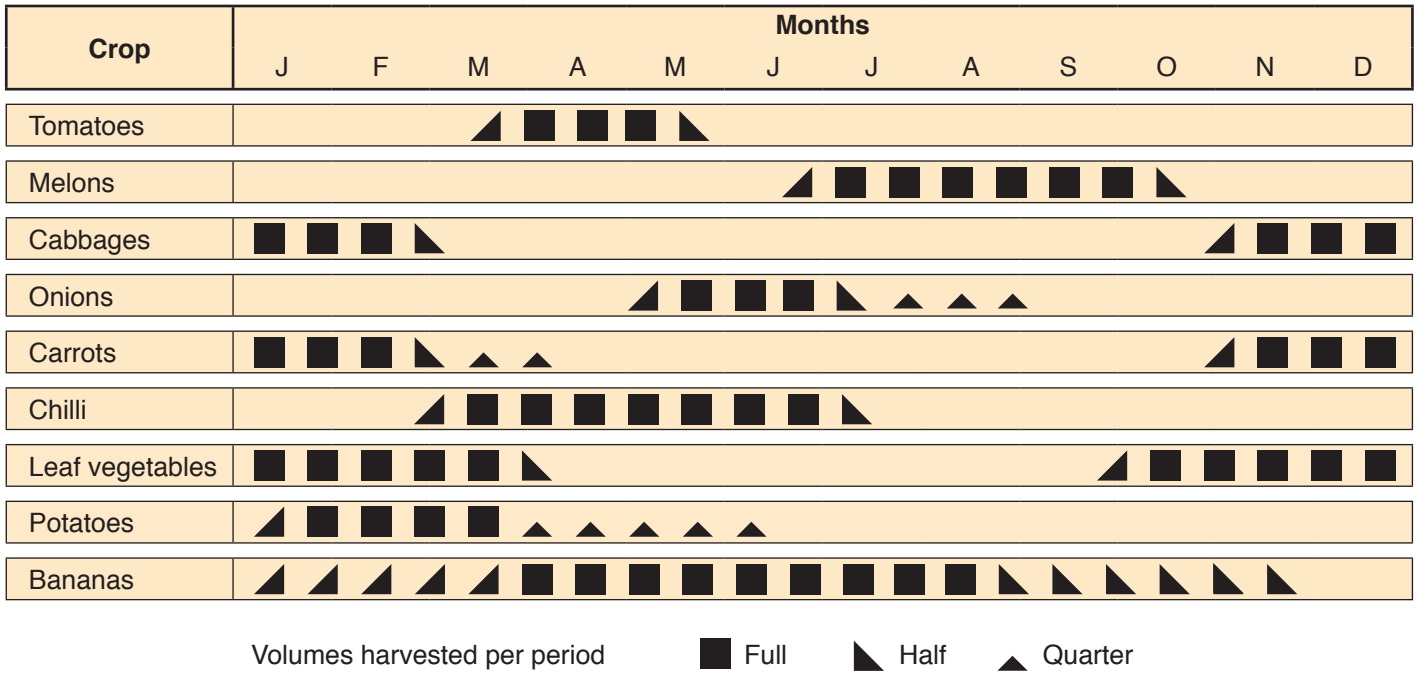
Crop calendars

A crop calendar can be used to compare those periods when an area is able to supply produce with the periods when market prices are likely to be high. It can also be used to compare the seasonality of an area’s production with that of a competing producing area. For example, farmers on the island of Mindanao in the southern Philippines have compared their crop calendar with

that of competing vegetable farmers in Northern Luzon province, in order to identify periods when they have a production advantage.

The crop calendar in Figure 7 is fairly typical of many hot countries. It shows diagrammatically when the crop seasons start, the peak harvest period and the end of the supply for each crop. Some crops, like cabbages, carrots and potatoes, which are temperate vegetables, are produced during the winter months. Melons and bananas, on the other hand, are mainly supplied during the hotter months.

Figure 7
A crop calendar



Cost of production calculations

Table 2 shows the costs of production of a dried vegetable product (Bouri) made from a bean paste (Black gram) with spices and other vegetables added. This data was collected from producers at a farmers' meeting in Bangladesh. When the producers saw the information presented in this way it led to discussions about how they could lower the cost of Black Gram and how they could increase sales. They also used it to compare their sales and margins with those of other producers.

Table 2

Costs of a dried vegetable product (Bouri), Bangladesh

	Producers				Average
	1	2	3	4	
Ingredients					
Black gram	25	30	20	26.7	25.4
Ash gourd	2	3.5	3.8	4	3.3
Spice	2	2.3	2	2.3	2.1
Total costs	**29**	**35.8**	**25.8**	**33**	**30.8**
Sales (price per Kg)	50	62	45	50	51.8
Gross margin per Kg	**21**	**26.2**	**19.2**	**17**	**21**
Sales (Kg per day)	8	10	12.5	12.5	10.8
Margin per day	**168**	**262**	**240**	**212.5**	**220.6**
Family workers	2	3	2	2	2.3
Margin/day/person	84	87	120	106	99.3

Cost of production data and sales price figures can be used to draw up crop budgets (see Table 6 in Chapter 7 for an example). These can then be used to advise farmers on the potential profitability of different crops. Banks and credit institutions may also find the data useful in working out production loan requirements.

The yields that farmers claim to achieve can be very variable. Sometimes they don't know what their yields are. Yields on research stations are usually much higher than farmers' yields and must **not** be used for calculating crop budgets. Yields can be estimated by weighing the harvest from a known area of the field and then calculating the yield for a hectare. However, this is only useful when the research is being carried out at harvest time. Farmers can be asked to record yields in order to make future crop budget calculations possible.

Production location maps

Maps of production locations help extension workers and farmers to understand whether there are 'clusters' where particular products are produced (see Figure 8).

These maps are also useful for discussions with traders and can be used to identify locations where farmers could group together in order to sell to traders.

Maps of alternative markets, distance from producers, size and whether their prices are good are also useful. They help producers to think about the options they have for selling their products.

Marketing system descriptions

Simplified diagrams showing the flow of products to markets are also a useful tool to help farmers understand the alternative ways that they can sell their products. Using different thicknesses of lines helps show which channels are the most important (see Figure 9).

Figure 10 shows the different marketing channels that vegetables can move through. As in Figure 9 the relative importance of the different channels has been estimated and is approximately indicated by the thickness of the lines.

Figure 8
Map of a production area

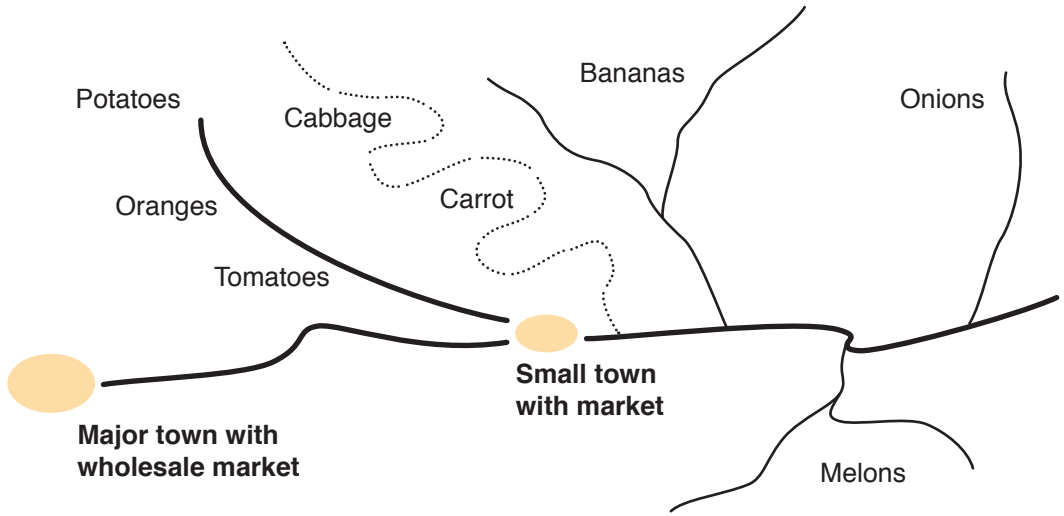


Figure 9
Market channels

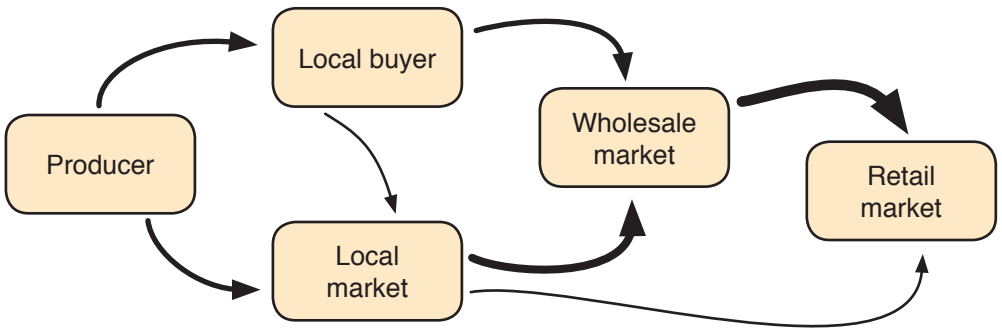
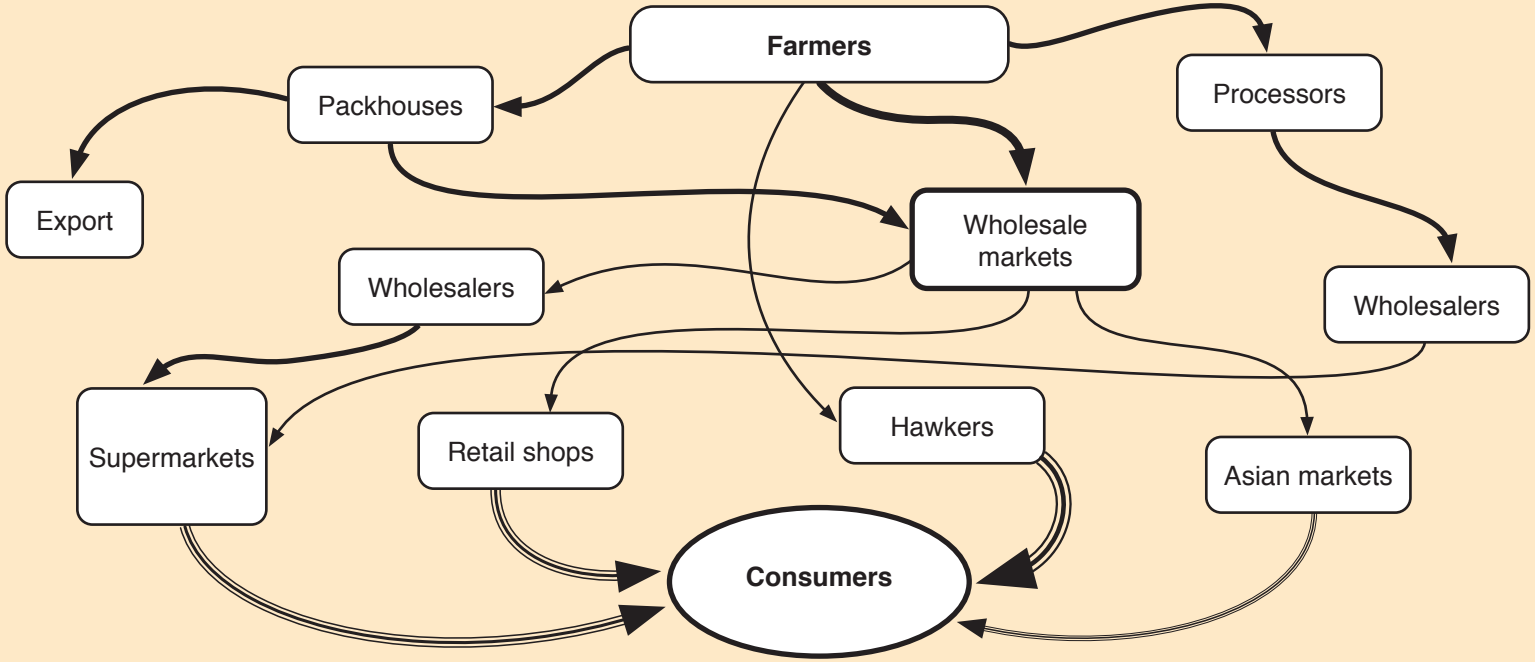


Figure 10
Marketing channels for vegetables, South Africa



In South Africa **wholesalers** are independent businesses who buy in bulk and sell on to the major retailers.

Agents sell product on farmers' behalf in the wholesale (national produce) markets and receive a commission. **Pick-up operators** are small-scale mobile traders, driving small trucks, who buy both in the field and at wholesale markets and sell to **hawkers**, who sell fresh produce from stalls in small markets and on the streets.

In 2002, sales through both supermarkets and via the informal sector (i.e. pick-up traders and hawkers) were increasing, while sales through the wholesale markets were falling, although they remained the single most important outlet in terms of volume. Sales to the traditional processing sector (i.e. canning and drying) were flat but there was growth in more progressive types of processing such as snacks, ready-to-eat meals, sauces and convenience foods, as well as in exports.

Note: As countries develop, marketing channels become more complex and new ones emerge. Agroprocessing develops (e.g. canning, freezing, juicing, drying, pre-packing, sauces, ready-to-eat meals) and restaurants or fast-food chains may develop their own specialist wholesalers.

Information on traders

One way of increasing the volume and value of transactions in the marketing chain is by improving the communication between the people in it.

Farmers' requirements are often quite simple. They mainly want to know who would like to buy their products. Such information is not complex and lists of addresses and telephone numbers can be compiled with some short notes on each trader (see Box 2).

Listing all the local traders, transporters and wholesalers of agricultural products can be very useful if farmers want to find alternative buyers for their products. The information for the Fact Sheets can be summarised in a simple one-page table.

Box 2

Trader Fact Sheet

Company name	A. Good Business	**Telephone**	41 63 58 44
Contact	A. Fellar — owner and chief salesman	**Fax**	41 63 58 44 / 35 21 65 ...
Address	101 Dalmatian Way Market Place, The Town	**E mail**	afellar@goodbusiness.com
		Other	mobile phone 0790 500 7402

Company history. Started as a trader in onions, it has expanded its business to act as agent (commission sales) and wholesaler of a wide range of fresh vegetables. It supplies some supermarkets but mainly small retail stores. It has a Government contract to supply vegetables to the local army barracks and is starting to store and process onions. Its turnover is around $1 million. The company employs 20 staff at three locations.

Company activities. Buys 500 tonnes of onions per year of which 200 tonnes are for processing. This demand is expected to increase. Potatoes (600 tonnes) and garlic (20 tonnes per year) are now sold as well as onions. In order to supply the Army with its total requirements of vegetables, the company started buying tomatoes, cabbages and leafy salads. This business has expanded.

Products demanded. The company is looking to have farmers grow 200 tonnes of onions with high dry-matter content for drying. Garlic is mainly imported. It is interested in local supplies if they are cheaper than imports. The company is seeking further supplies of cabbage in the summer and tomatoes in the winter. It wants to have guaranteed year-round supply of fresh leafy salads from local sources.

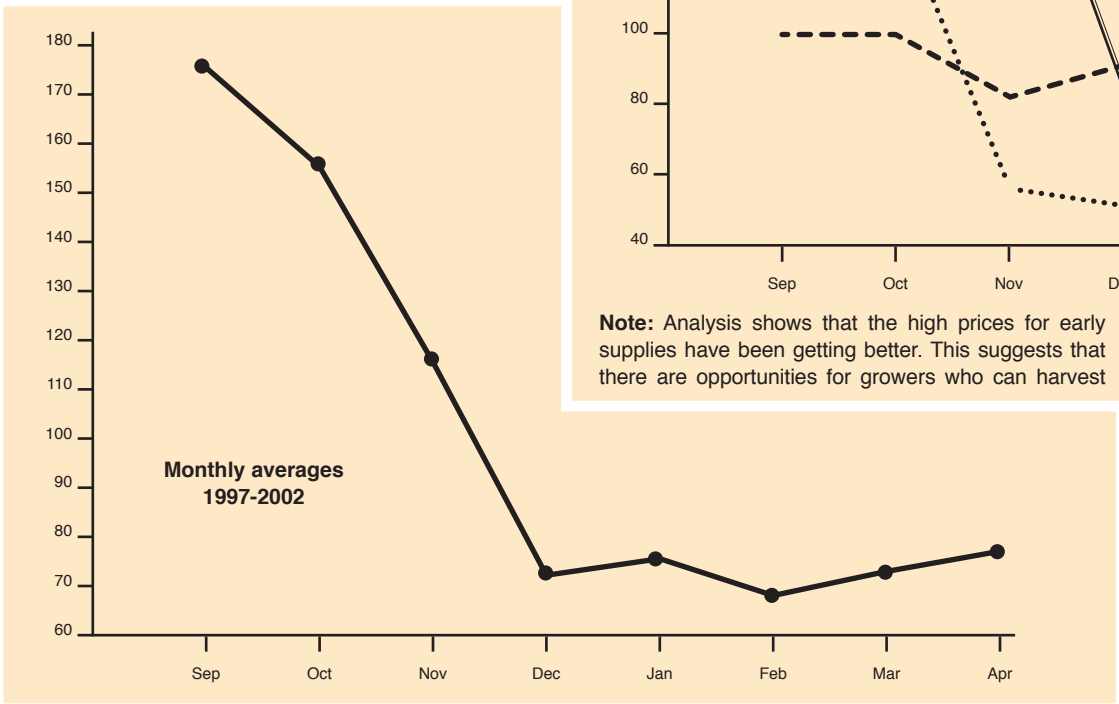
Procedure for doing business. Will contract at minimum fixed prices with onion growers prepared to grow specialist onions for drying. Potatoes, onions, tomatoes and cabbage are sold on a consignment basis (commission at 10% of sale price). It is interested in a profit-sharing venture with growers who want to develop a business producing fresh leafy salads all-year-round.

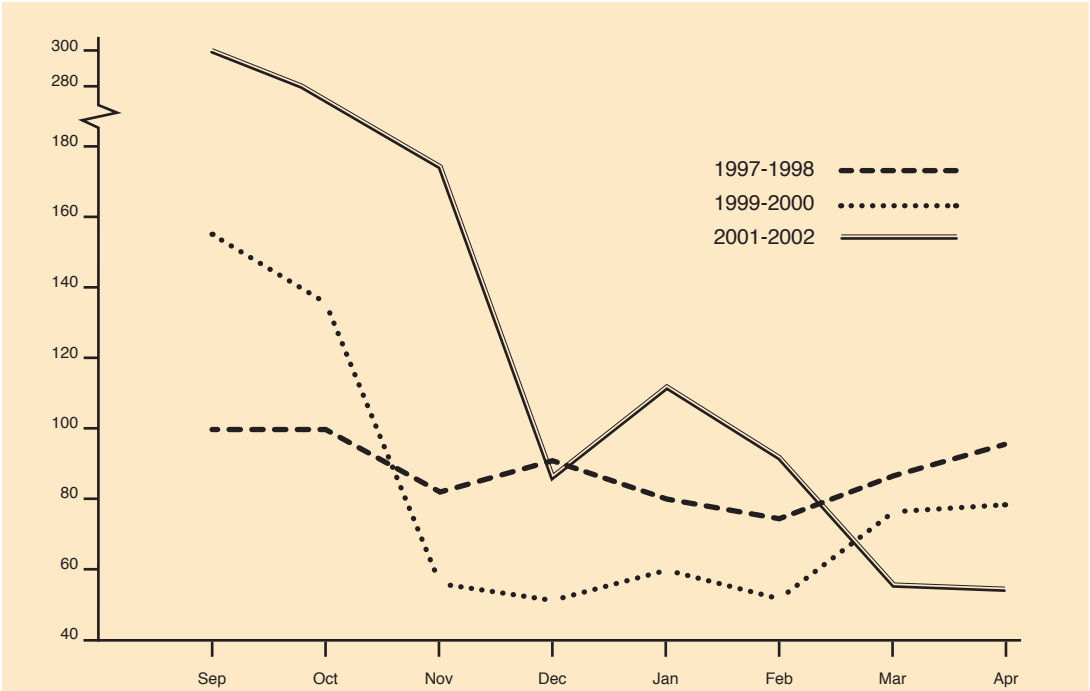
Price forecasts

Farmers want to know what prices they could receive. Future prices are, of course, unknowable. For farmers, the best guide is the range of prices received in the past.

Figure 11

Plotting price trends; wholesale prices of cauliflower, Pakistan





Note: Analysis shows that the high prices for early supplies have been getting better. This suggests that there are opportunities for growers who can harvest outside the main season. Prices are highest in September and October and lowest in December to February. They increase again in March.

Analysis of historical price data using averages and charts helps to indicate typical price patterns. Price data can be used to help farmers create simple crop budgets and to identify new market opportunities (e.g. for 'off season' production).

Table 3

Findings from studies of small-scale farms, South Africa

	Eastern Free State	Northern Province
Allocation of land	37% by Chief, 27% municipal property, 10% rented, 9% owned	Not Available
Size of holdings	33% less than 1 ha, 28% 1-10 ha	52% less than 1 ha, 27% 1-10 ha
Types of enterprises	42% vegetables,35% beef, 30% dairy, 25% chickens	87% vegetables, 25% maize, 28% beef, 11% poultry, 11% fruit
	Vegetable farms	
Major crops	Cabbage 50%, beetroot 50%, spinach 40%, carrots 37%, potatoes 30%,	Tomatoes 77%, cabbage 70%, onions 40%, spinach 27%,
Marketing channels	Private individuals 64%, open market 17%, small shops 8%, hawkers 6%, institutions 6%,	Hawkers 35%, private individuals 28%, open markets 26%, small shops 11%
Transport	Not used 47%, foot 19%, own pick-up 16%, taxi 9%, hired truck 9%	Hired transport 40%, not used 28%, own transport 32%,
Sales-promotion techniques	Word of mouth 62%, take produce to buyer 28%, display 7%, chance 3%	Display 46%, word of mouth 39%, take produce to buyer 12%, chance 3%
Price setting	Same as market 24%, extension officer advice 20%, shop price 18%, own price 18%, same as other growers 7%, same as hawkers 7%	Own price 38%, same as market 22%, same as other growers 20%, take price offered 14%, extension officer advice 6%
Value added	Wash vegetables 63%, package 23%, peel 6%, cut 6%	Wash and trim 56%, package 44%
Distance to markets	Less than 1km 21%, 1-5km 33%, 6-30km 25%	Less than 1km 22%, 1-5km 8%, 6-30km 33%, over 30km 37%
Farmers' proposals for improving vegetable markets	• build new market places (50%) • sell direct to supermarkets • cash sales only • storage & transport • sell in other towns, in open markets, to hawkers	• build new market places (90%) • sell at major markets • improved prices • contract sales to supermarkets • advertise • African agents at major markets
Farmers' proposals for Government assistance	• encourage cooperation between African and commercial farmers to supply sophisticated consumers • build farm stalls in towns • assist in transport to major markets • improve roads	• transport subsidies • market information • building market stalls • financial assistance • identifying marketing outlets • tenders to supply schools, hospitals

Diagnoses of marketing problems

Discussions with farmers can reveal their needs and problems, but first it is useful to study the local production and marketing practices, as reviewed in Chapter 4. This makes it easier to understand what assistance farmers most need. Table 3 compares surveys of small-scale farms undertaken in two provinces in South Africa:

- in both areas vegetable production is the most important type of farming, but the cropping mix is slightly different;
- in Northern Province small farms are much better linked into the marketing chain, selling to hawkers and at open markets. In Eastern Free State farmers mainly sell to individual consumers;
- Northern Province producers hire transport or use their own, but Eastern Free State growers mainly rely on selling directly from their farms;
- Eastern Free State growers are generally nearer to markets but complain about buyers demanding produce on credit and not paying, as well as the level of theft;

Table 4

Farmers' marketing constraints, Mozambique (percentage of farmers interviewed)

Constraints	District				
	Nampula	Mecuburi	Mogovolas	Ribaue	Malema
Transport	86	100	67	58	50
Lack of competition/ few traders	33	66	78	66	19
Poor prices	24	50	45	33	25
Unreliable traders	29	33	45	33	19
Roads	76	33	—	—	25
Lack of, or poor market places	8	16	—	33	—
Farmer credit	—	33	—	—	25
Input costs	—	—	—	25	13

Note: Farmers often identified more than one constraint, hence columns total more than 100 percent.

- Both areas believe that marketing could be improved by new physical markets and look forward to the expansion of supermarkets that would buy directly from farmers.

Table 4 summarises the perceived constraints of farmers in the northern part of Mozambique. This table was prepared following an interview programme with sixty farmers in five districts. Although the importance of the constraints identified varied from area to area, transport of produce was clearly considered to be the major one.

The second most important constraint was said to be the limited number of traders and the absence of competition between them. However, this raised the question of why there were so few traders. Was it because they did not have the necessary resources (i.e. cash, transport), knowledge and interest, or was it because there was little demand for the products the farmers grew.

Farmers always complain about poor prices and this is a predictable finding of any field research. Inadequate prices may reflect high marketing costs or a lack of demand. It may be possible to improve prices by lowering the unit costs of marketing and promoting more competition between buyers, by improving negotiating by farmers and by organizing access to new market opportunities.

During the survey in Mozambique farmers often described traders as unreliable. By this they meant that the traders who visited were inconsistent and unpredictable and there was no certainty as to whether they would visit and what prices they would offer. This may indicate a wish on the part of farmers to develop more regular and reliable trade.

Product fact sheets

In addition to Trader Fact Sheets (see earlier in this Chapter), Product Fact Sheets can be prepared to give specifications of the products demanded by the market, along with indications of the seasonal price and supply patterns. The purpose of the fact sheet is to provide producers and suppliers with the critical information they need in order to make correct decisions on the products they produce and sell.

The information presented in Product Fact Sheets can be developed during trader interviews. It should include information on:

- varieties, appearance, taste;
- grading and quality standards;
- seasonality and supply patterns;
- typical prices and price patterns;
- packaging;
- sales trends.

6 Helping farmers to decide what to do

Main points in Chapter 6

FARMERS SHOULD BE HELPED TO MAKE THEIR OWN MARKETING DECISIONS. TO MAKE DECISIONS FARMERS MUST BE WELL INFORMED

Categorising farmers helps to decide how to assist them; Holding farmers' meetings involves all farmers in decision making; For meetings to be successful they must be well planned.

TO ADVISE FARMERS YOU NEED TO KNOW WHAT COULD OR COULD NOT WORK

There can often be several alternative marketing strategies; Solutions involving direct and subsidized assistance from governments or NGOs are rarely sustainable.

WORKING WITH THE PRIVATE SECTOR

HELPING FARMERS TO MAKE DECISIONS

Extension workers sometimes try to "push" farmers into accepting recommendations. However, when decisions about what to grow or how to sell are imposed this rarely leads to success. Farmers do not feel that the decisions are theirs, they are not committed to them and they feel a lower sense of responsibility. If things do go wrong it is easy for farmers to blame the person who persuaded them to do the "wrong" thing.

Helping farmers to make their own decisions is a more difficult and slower process but, in the long run, it will be more successful than trying to tell farmers what to do. When groups of farmers take on "ownership" of their plans they are more enthusiastic, show more determination to overcome problems and take greater pride if their plan proves successful. They are much more able to overcome problems in the future and to actively seek solutions for themselves.

To make decisions, farmers must be well informed. They need to know what choices they have. They will have to discuss what they can do to improve their marketing and agree on what to do and on who is responsible for the individual tasks. Your role is to guide this process.

The ways in which you can help farmers to decide on what needs to be done to improve their incomes depends on what stage they have reached in their marketing development. Box 3 sets out a method of categorising farmers. This approach helps to identify their likely needs, and what that might mean in terms of possible next steps.

Box 3

Categories of farmers in relation to their marketing approach

Type	Description	Needs	Possible activities
Stepping in	Producers wanting to start selling their products	Basic knowledge of how market works and products demanded	Training. Market visits. Indication of possible products. Introductions to potential buyers
Hanging in	Producers showing little enthusiasm for improving the marketing of their products	Few	None
Stepping up	Producers already marketing their production, but now looking to improve their sales and profitability	To reduce costs, increase sales and/or raise prices	Investigate how to lower costs, increase output and improve sales
Stepping out	Producers looking to diversify into new products and markets	Identify possible products, identify markets and possible contractual arrangements	Market research. Assess profitability. Plan and carry out development programme

Note: when farmers are only just starting to sell their products they are categorised here as **"stepping in"**. Such suppliers are unlikely to know who to sell to and what the market wants. There will be some farmers who are satisfied with their produce marketing arrangements. They are said to be **"hanging in"**. As they are not requesting help there is no need to provide it. Most farmers, however, are likely to come into the category of **"stepping up"**. This means that they are currently selling a part of their production and are looking for ways to improve their incomes. Generally, this is achieved by selling more products, obtaining higher prices or reducing costs. The **"stepping out"** group are farmers who want to diversify by selling new products or by going into new markets. They require similar support to the "stepping in" group, but they already have the advantage of being commercially experienced.

Holding a farmers' meeting

Decisions on what to do are generally made at farmers' meetings, which you can organize. These should last between two and three hours. Invitations need to be sent in advance. In the time available only two or three major topics can be discussed. Decide the topics to be discussed and draw up an agenda.

AGENDA

Traditional opening
(in accordance with local culture,
e.g. prayers)

Purpose of meeting
(e.g. ways to increase sales)

Introductions

Topic 1
What products the market wants to buy
(presentation by traders)

Topic 2
Discussion — Ways to increase sales

The most successful meetings maximize the number of farmers actively joining in the discussion. The meeting arrangement is important. Clustering the active participants together helps encourage discussion. If women play an active role in farming you need to ensure that they have a full opportunity to express their views.

Farmers should be front and centre at the meeting while observers, such as children, should be on the outside of the group.

After the normal formalities, such as prayers, you should explain the purpose of the meeting and the agenda. Asking people to introduce themselves has the dual function of helping outsiders to learn or remember people's names and getting people used to speaking to a group. Meetings should normally involve a combination of presentations and led discussions. Your approaches to organizing a farmer meeting could include:

- discuss topics that both help farmers to understand their existing situation and identify their opportunities and constraints;
- encourage farmers to think of ways to improve their own marketing;
- focus on practical issues;
- use audio-visual presentations wherever possible;[1]
- use traders and others to inform farmers about how the market works;
- ensure that each topic discussed follows logically from the last;
- provide farmers with the information they need to make decisions;
- use case studies and examples from elsewhere;
- anticipate the marketing problems that farmers will identify and be able to offer different solutions;
- finish the meeting with a clear understanding of what the next steps are, who is responsible for them and when they will be carried out.

[1] For example, FAO has available two videos on horticultural marketing. E-mail: AGS-Registry@FAO.ORG for more information.

Meeting content. You can make short presentations on the results of your market research. Factual presentations need to be kept simple and information provided should make a particular point or illustrate an issue.

Short presentations by farmers or traders can be very useful. An effective method of helping people who are unused to talking in public is for you to interview them. Encourage farmers to participate by asking them to provide information and to indicate what they see as their problems and their opportunities. Questions from other participants should be encouraged. The meeting should be a place where ideas can be discussed and where support and agreement is gained.

Discussion topics could include:

- comparisons of production and marketing costs between different farmers;
- identification of the major crops produced and those that are sold and are the most profitable;
- advantages and disadvantages of alternative markets;
- identification of problems and possible solutions;
- identification of potential new products;
- how to find new markets.

Write on a board or draw a diagram of the findings of the discussion. As some farmers may not be literate, it is important to occasionally read out what has been written and to use diagrams and other visual information.

Offering options. During discussions a number of issues and problems will emerge. Farmers may suggest possible solutions, but will often not be aware of the range of ways that problems can be handled or opportunities exploited. Box 4 gives an example of where an extension officer has prepared a list of the major problems that farmers themselves had identified during an earlier meeting, together with the possible solutions.

You can make suggestions regarding alternative solutions to farmers' marketing problems. Often, farmers identify different markets or marketing strategies that they would like to develop. Some of the most common are set out in Table 5, with their advantages and disadvantages. Being aware of these options is useful in order to explain to farmers some of the implications of using different marketing channels.

Box 4

Examples of farmers' marketing problems and potential solutions

Problems	Solutions
Producers lack market knowledge	Develop the market knowledge of the producers. Establish a strong relationship with trustworthy buyers and gain marketing knowledge and insight from them. Bring market traders to 'Marketing Training Courses' so that producers can observe market research interviews being undertaken, and ask questions themselves. Encourage producers to visit and investigate the market themselves.
Small volume of produce to sell	Use group marketing to consolidate production, to sell to wholesalers or traders or to sell direct to consumers. Jointly plan production and marketing so as to have sufficient volume of produce available at one time to provide marketing strength (i.e. concentrate on specific products, at particular times, with common harvesting days). Focus production by a group on a limited range of products to create a larger volume of a smaller range of products.

Table 5

Some alternative marketing strategies

	Advantages	Disadvantages
Sell to neighbours	Often the first step into commercial farming is to sell to neighbours. Growers should be able to supply products that others find difficult to grow, e.g. out-of-season produce or the more difficult crops.	The market is easily over-supplied.
Sell to local market	This is the next stage in commercialization. It involves taking produce to a local market, normally a small town where there are wage earners needing to buy agricultural produce.	The market is easily over-supplied.
Sell to visiting traders	Traders buying at the farm make it unnecessary to leave the farm. There are no transport issues. Good buyers provide insight into what products the markets wants, enabling farmers to concentrate on production.	Difficult to negotiate prices from a strong position. Reliance on the buyer for market information.
Sell via wholesale markets	The market can absorb large quantities of produce. Market prices are relatively transparent. If there is sufficient volume and farmers are organized then products can be collected from many different farms.	Higher level of commercial and marketing skills is required. Market agents may need to be chosen, prices checked, transport organized, and produce graded, packed and presented well.
Sell to processors	The processor needs to obtain raw materials and so the market is more reliable. Some processors can provide inputs and technical support to ensure the yield and quality required. Contract production is a possibility. Generally, the demand for processed food products is expanding.	Prices can be lower. Farmers may be tempted to ignore the contract and sell into higher-priced local markets. Processors may not provide the required technical or input support. The processor may find that demand for its processed products goes down and then stop buying from farmers.
Peri-urban production	Producers on the outskirts (or very near) to town can access the large urban market, especially for perishable produce. Produce is either taken to market or, if there is strong demand, traders will collect from the farm, sometimes even harvesting the crop.	Theft and security can be serious problems.

Box 5

Working with farmers to improve marketing

Step 1
Lead discussions with the farmer group on main products, local resources and skills to identify a short list of potential product areas. Form a marketing task force (4-6 members).

Step 2
Work with task force to calculate production costs and profitability of alternative crops. Consider alternative markets and the location for market research identified, along with a limited number of potential products. Give guidance on carrying out market research/trade interviews.

Step 3
Let task force observe initial trader interviews. Thereafter they should carry out their own market research covering products (prices, quality, volumes, demand, prospects) and outlets (shops, traders, markets, terms of trade).

Step 4
Task force discusses findings and agrees recommendations for the full farmer group.

Step 5
Task force presents to farmer group its findings and recommendations. Together, farmers develop an action plan setting out what they will do, who is responsible and the dates of the main activities.

Towards the end of the meeting the "next steps" need to be agreed upon. It is useful at this point to summarise the main points discussed, the points agreed and the options that have been considered as the next steps.

Improving marketing is often a long process. It is unlikely that marketing problems will be solved in one farmers' meeting . The best outcome is often to agree on the next actions to take to help solve the problems. This must take into account what must be done and who will do it. A timetable needs to be prepared, so that everybody understands their roles and responsibilities. An example of this is shown in Box 5.

KNOWING WHAT WORKS

When organizing farmer meetings you must have a good idea of what can be done to solve marketing problems. Solutions that farmers propose must be realistic and achievable. Normally, achievable solutions are those the farmers work on themselves. "Solutions" that are less likely

to be achievable or sustainable in the long run are those that require an outside body, such as the government or an NGO, taking responsibility for marketing the produce.

Examples of realistic and unrealistic solutions are given in Table 6. In Table 7 more detail is given about mistakes to avoid when trying to improve marketing.

Table 6

Realistic and unrealistic solutions to marketing problems

	Achievable solutions	Unrealistic solutions
Traders don't come to buy	Work to increase quantities available in order to attract traders.	Get government to set up a marketing board.
	Ask local NGO or extension worker to develop contacts with traders.	Ask NGO to buy from farmers.
Traders don't visit because roads are bad	Work together to repair and then maintain the local road.	Try to get national government to repair the roads.
Low prices	Seek out different, higher-priced markets.	Persuade the government to set a minimum price or to buy all surplus production.
Oversupply	Look for alternative markets and in the long term encourage diversification and market-orientated production.	Expect government to build processing plants to utilize oversupply.
Lack of market places	Develop a small-scale market on specific days.	Ask the government to build an expensive new market without evidence of sufficient supply and demand.
Peri-urban production	Organize farmers and local transporters to set up a regular transport service that is profitable to the transporter.	Expect government or private sector to set up a transport operation that loses money.

It is often tempting for those working with farmers to become involved directly in marketing, for example to use government vehicles or those of an NGO or a development project to transport farmers' produce. In the long run this has many disadvantages. It is unrealistic to expect government or other vehicles to carry out this activity. Once started it is difficult to stop and stopping will disappoint farmers who become dependent on the service. From the outset it is important to establish business relationships that can continue without external support. It is much better for farmers to work with a local transport company or with established traders than to rely on subsidized support from development agencies.

Governments have often tried to help farmers by guaranteeing to buy produce at fixed prices. Although this may help individual farmers in the short term, in the long term it is a very expensive policy. Farmers will increase their production if they know that there is a guaranteed price and market. This production far exceeds market demand and therefore has to be thrown away.

Sometimes, processing or storage are seen as the solution for marketing problems caused by surplus production. They are not. Raw material supply for processing should mostly involve contract production, to ensure the right volumes are available throughout the processing season. A factory cannot be justified on the basis of occasional surpluses. Such investments must only be made when there is a firm market for the processed product and a reliable raw material supply. Long-term storage of horticultural produce has only limited usefulness, especially in situations where there is oversupply. Overcoming surpluses is difficult, but it is more likely to be achieved through better market information and through farmers carrying out the market-planning activities discussed in this guide.

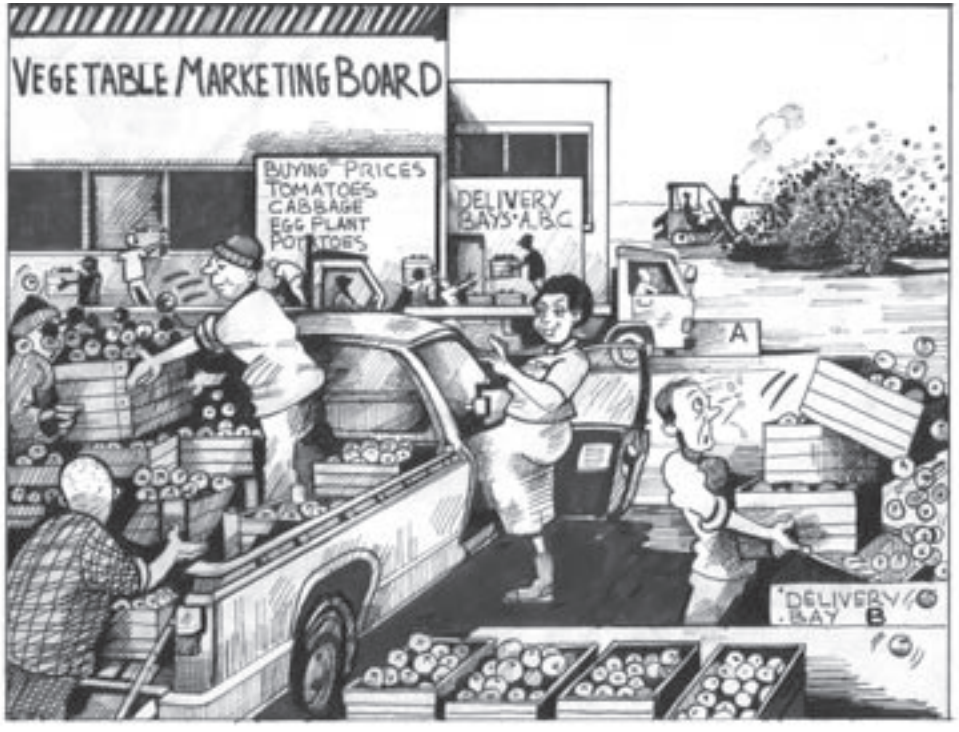
Running a successful business requires different skills from those of being a civil servant. Government-run trading operations are rarely successful businesses. As they are not profitable, they are not sustainable and, in the long term, create more problems for farmers than they solve. Staff often come under pressure from well-connected farmers to buy sub-standard produce, which cannot then be sold.

Farmers, particularly those who are a long way from the market, often ask for their transport costs to be subsidized. This is an expensive policy and not sustainable, and when the subsidies are withdrawn it leaves the growers worse off than they were before because they planned their farming activities on the basis of subsidies, not on the basis of market demand and their ability to supply that demand profitably.

Grading reduces the volumes marketed and increases costs, but puts up prices. Introducing grading standards needs to be considered with care. Standards are best based on the grading already being carried out by traders.

Farmers need to be aware of these and be able to follow them, but governments should not try to impose standards not required by the trade. Any standards introduced need to be supported by the trade and consumers must be prepared to pay for the additional cost.

Marketing systems have often developed over generations. Any changes need to be carefully considered so that they work with the system, not against it. In most cases, your role is to help farmers work within the existing systems, or try to make small changes to those systems.



Fixed government buying prices or price subsidies encourage overproduction, which often cannot be sold.

Table 7 — **Common mistakes in marketing**

	Situation	Result
Fixed-price buying by governments	Fruit and vegetable production can be highly risky with market prices sometimes being too low to cover costs. As a result there is often a demand from growers for the government to buy horticultural produce at fixed prices.	Whenever schemes like this have been introduced growers have responded by expanding production. They do this because government prices guarantee profitable, risk-free production that bears no relation to demand. Large volumes of produce are wasted. These schemes are a great drain on government resources that could be spent better elsewhere (e.g. by stimulating local demand, developing new markets or improving rural infrastructure).
Food processing to utilize surpluses	When prices fall because of overproduction it is often recommended that a food-processing plant be established to utilize the surplus.	Profitable food-processing industries cannot be based on the occasional supply of raw material when the fresh market is glutted. Processing requires investment in expensive machinery. Successful plants have to have a guaranteed supply of raw material and generally must enter into contracts with growers to ensure that supply is evenly extended over the longest possible supply season. They must produce processed products for which there is a demand and which can be sold profitably.
Subsidized transport	Farmers often request that the government or an NGO subsidizes their transport to market.	The farmers rapidly build up a dependency on the subsidized transport. The costs to government are generally unsustainable and the NGO often runs out of funding after a few years. When the subsidized transport is withdrawn this will destroy farmers' livelihoods and cut off their income.
Ultra-modern, post-harvest techniques	The introduction of sophisticated post-harvest technologies, such as expensive packaging and a cool chain, is expected to reduce crop wastage.	Modern technologies are no substitute for good management. It is only after basic good practices have been introduced successfully that investments should be considered in expensive technology.
Direct involvement of the extension officer in business decisions	An extension officer makes decisions for the farmer or becomes directly involved in trading.	It is vital that an extension officer always allows the farmer and the buyer to come to an agreement together. If there is a dispute or if either party is unhappy, it is very easy for them to blame the officer. It is only by being impartial that the extension officer can avoid blame if anything goes wrong and is able to resolve disputes.

Table 7 — continued

	Situation	Result
Change for the sake of change	A government department with responsibilities for marketing may feel obliged to change the existing system.	What is not often fully appreciated is that most marketing systems have evolved in the way they have for very good reasons and will continue to respond to changing market requirements. Like all systems a marketing system will be less than perfect. However, if the system functions reasonably well, if there is competition and if produce is well distributed around the country, then governments should be extremely cautious about trying to impose unnecessary changes. These could destroy the system that is meant to be improved.
Storage of produce to exploit price rises	It is commonly thought that, in times of oversupply, produce can be held in storage and marketed when price rises occur.	Most horticultural crops are only suitable for short-term storage. Storage is expensive and detracts from freshness and quality. In most situations, when produce is brought out of store it has to compete with fresher produce. The result is reduced prices and the farmer having to pay for the storage costs as well. Relatively few crops are suitable for long-term storage. If prices are low at harvest growers place a high proportion into storage. When these crops are marketed out of storage there is fierce price competition. Traders rarely make the mistake of storing produce for which there is no demand, but governments sometimes seek to intervene in marketing systems by promoting storage development.
Government-run trading operations	Traders are often accused of making excessive profits. Government-run horticultural trading operations are thought to result in improved grower returns and lower consumer prices.	Government-run enterprises marketing horticultural produce nearly always fail. They can only cover costs if they have some special monopoly (e.g. importing food products). Amongst the most common reasons for their failure are: unnecessary investments being made in equipment and buildings; management only working regular office hours and not having a profit incentive; overstaffing and restrictive working practices; not having sufficient flexibility to rapidly adjust prices; lack of quality control; having to purchase all produce offered by farmers, with political pressure being exerted to make them do so; high wastage levels of produce. Horticultural marketing is a highly competitive business requiring strong entrepreneurial and trading skills. Civil servants do not generally operate in this way.
Imposing national grading standards for the domestic market	It is often recommended that horticultural marketing will be improved by the introduction of national grading standards.	When compulsory minimum grading standards are introduced it can put up prices to the consumer as the standards limit the amount of produce that is marketable and add to costs. The introduction of standards is best done by formalizing the grades that are already used. Existing informal and flexible grading standards, which respond to market requirements and the state of supply and demand, should be used. The consumer needs to be willing to pay a higher price for the sorted product. Any attempts to force any other grading onto the horticultural industry will be almost impossible to police, will waste government resources, may well remove perfectly safe and nourishing produce from the market, may promote corruption and will certainly fail.

WORKING WITH THE PRIVATE SECTOR

Often, the key to lifting farmers' incomes is to attract businesses to work with producers.

Economic development generally leads to the emergence of new businesses in the agricultural marketing chain. Food processing companies are established and they need to secure their raw material supplies. This, in turn, creates new market opportunities for farmers and business opportunities for traders. Private companies will often be keener to work in an area where there is an extension officer or NGO to help, as this could improve their chances of success.

The development of new enterprises and new business opportunities provides the potential for real increases in farm income. It is also very risky. Some key questions must be asked of any new product or farming enterprise. If the answers to these are positive there will be a greater chance of success. The questions are:

Is there a private-sector partner involved?
There is a greater chance of success from business proposals put up by existing successful agricultural trading or processing businesses.

Is the enterprise already part of the area's farming system?
Most successful enterprises are based on existing and proven agricultural enterprises. When farmers understand the crop, confidence is higher. Totally new products are much more risky.

Is the enterprise likely to be well adapted to the local conditions?
Small-scale farmers are, naturally and correctly, reluctant to take risks. They may not want to take on new products and enterprises unless they think there is a good chance these will work. Where new crops are being considered, then decisions have to be made as to how the risks involved with their production can be reduced.

Will the enterprise generate satisfactory profits to growers?
Farmers only start a new enterprise if they feel that the potential profits are likely to justify the investment in labour and time. New products will need to be more profitable than existing enterprises in order to encourage the farmers to take the risk.

Are there added value or employment opportunities?
Preference can be given to enterprises that offer benefits over and above improved farm income. This might include value-addition enterprises and employment possibilities. Communities often have a preference for the creation of stable employment opportunities rather than the risks associated with farming.

Does the enterprise have an advantage over enterprises in other areas?
The product will generally need to be produced at a cost advantage over other production areas.

Do market opportunities exist?
Products chosen for development must depend very much on having a clear market opportunity and a market size large enough to improve rural incomes.

Is the venture being developed without subsidies?
Developments that require subsidized support from NGOs, donors or governments may not be sustainable after that support has been withdrawn. The availability of subsidies often encourages people to ignore the fact that there is an inadequate market for the products involved, or that the business cannot be operated profitably.


IS THE PRIVATE SECTOR INVOLVED?
ARE THE CROPS ALREADY BEING GROWN?
WILL THE CROPS BE SUITABLE FOR THE AREA?
WILL THE PROFITS BE SATISFACTORY?


CAN VALUE BE ADDED OR JOBS CREATED?
WHAT ADVANTAGE DO WE HAVE OVER OTHER AREAS?
DO MARKET OPPORTUNITIES EXIST?
CAN WE DO THIS WITHOUT SUBSIDIES?

7 Producing for the market

Main points in Chapter 7

FARMERS NEED TO PRODUCE WHAT CONSUMERS WANT TO BUY

Factors in choosing which crops to grow;
Balancing profitability and risk.

INVESTMENTS THAT CAN IMPROVE PROFITABILITY BY ...

Reducing risk;
Increasing prices;
Increasing yields;
Reducing production costs;
Adding value.

HELPING FARMERS TO ORGANIZE INPUT SUPPLY, FINANCE AND TRANSPORT

ACTIVITIES TO LINK PRODUCTION TO MARKETS

ADAPTING PRODUCTION TO MARKET NEEDS

Your main role in marketing is to improve the understanding of your farmers about marketing and how they can become more commercial and profitable by producing crops that are demanded by the market. This chapter considers ways in which farmers can adapt their production to meet the market's needs. Most farmers are naturally conservative and will be reluctant to go into new enterprises, because they involve risk. New crops or the introduction of new technologies or production techniques should, therefore, initially be undertaken on a small-scale trial basis.

Pre-production issues and production planning

Growers need advice on which crops to grow and what market opportunities they can target. While the final decision must always be that of the farmers, you should be able to help them plan their production. Although production issues, such as labour availability and crop rotations, have to be taken into account, the key factor affecting production decisions is that production must be market-oriented. This means producing products for which there is a demand and which farmers can grow profitably.

Individual crop selection. Crop selection should be based on the likely net returns of the major alternative agricultural enterprises (see Table 8). These calculations will establish which products are likely to be the most profitable. They can be discussed with farmers.

Market research should have shown which local products are likely to be most successful in terms of cost, quality or seasonality, compared with products from other areas. The research should also have shown which varieties are favoured and the best time to supply them. These findings need to be converted into practical recommendations for farmers, covering such issues as:

- varieties favoured by the market;
- sowing dates (e.g. whether to extend the period of supply or aim for a particularly high-priced period). Whether to avoid times of oversupply;
- other techniques to extend production into high-priced periods, such as using late or early varieties, transplanting, or using polythene tunnels or irrigation;
- techniques to improve quality, such as optimum fertilization, crop protection, pruning, irrigation, and weather protection.

Table 8 sets out a summary of the comparative costs and returns of three different crops. Although Crop C returns the highest sales, its profitability is less than for Crops A and B. Farmers should be aware of the difference between gross returns (i.e. the value of sales) and net returns (i.e. the value of sales after deduction of costs). They must consider likely net returns when planning what to produce.

Table 8
Selecting crops to grow

	Crop A	Crop B	Crop C
Expected sales from 1 ha	3 000	2 000	4 000
Costs			
Production	1 000	500	2 000
Marketing	1 000	500	1 500
Net return	1 000	1 000	500
Select crop	**Yes**	**Yes**	**No**

Figure 12 on the next page provides an example of a detailed costing for a crop of cucumbers. In calculating costs it is useful to remember that 80 percent of costs are normally contributed by only 20 percent of the items. You should therefore concentrate on collecting accurate information on the major costs. Individual farmer costs and returns can vary greatly, and calculations such as those shown in Figure 12 are useful to help farmers compare their performance with that of others.

Figure 12

Production costs, gross margin per acre and break-even cost for cucumbers

	Income	**(a) Marketed yield per acre 6 000 kg**	
		(b) Price at $0.25 per kg	
		Gross income (a × b) = $1 500	
			$
Production costs	**Input costs**	Seed, 1.5 kg at $22 per kg	33
		Fertilizer, 2 × 50 kg Amm. Sulphate at $6 per bag	12
		Organic manure, 15 tonnes at $5 per tonne	75
		Sprays 5: approx. $11 per acre	55
		Mechanized soil cultivation $40 per acre	40
		Subtotal inputs	*215*
	Labour costs	Manual land preparation, 2 days at $2 per day	4
		Sowing, 3 days at $2 per day	6
		Spraying, 2 days at $2 per day	4
		Irrigation, 10 days at $2 per day	20
		Hoeing, 12 days at $2 per day	24
		Harvesting, 90 days at $2 per day	180
		Subtotal labour	*238*
	Marketing costs	Transport at 1.5 cents per kg × 6 000 kg	90
		Packaging, 20-kg crates at $1 per crate	300
		Subtotal marketing	*390*
		(c) *Total production and marketing costs*	***843***

Gross margin/net return per acre [(a × b) – c] = $657

Break-even price per kg (c ÷ a) = 14.05 cents per kg

Note: This calculation provides a simple example of how farmers can calculate the profitability of growing a particular horticultural crop. To carry out such an analysis, it is important to have accurate information. The calculation can also be made before growing the crop, to see if it will be profitable or not. In this case, a realistic forecast of prices is required.
1 acre = 0.405 hectares

Selection of a range of crops. It is advisable for farmers to achieve a balance between growing a wide range of crops and concentrating on those products where they have the most advantage. Producing a range of crops reduces the impact of a possible production or market failure for one crop. For example, if farmers grow only potatoes and their crops are affected by Potato Blight, they will earn nothing. However, if they grow two or three other crops and have successful harvests they will be less affected by the potato disease.

Growing many different crops can cause problems. This is because the farmer is unlikely to have the necessary expertise in all the crops and the smaller volumes of each produced makes marketing more difficult. Very often, growers will have preferences for crops that they feel comfortable growing and/or that grow well on their land.

As agriculture becomes more developed, farming become more specialized. Individual farmers, such as those supplying supermarkets or agroprocessors, generally have to concentrate on relatively few crops. Although growers may become more skilled, they can rarely be experts in more than three or four crops.

The most profitable crops are often the most risky. It is useful to have a cropping system in which risky crops are balanced against crops that can be relied upon. An example might be to grow one or two large-volume vegetable crops, such as potatoes and onions, together with higher priced products such as capsicum (green or red peppers) and leafy vegetables or salads. Small farms often have more labour available per hectare than do large farms and they can take advantage of this by concentrating on growing labour-intensive crops. These are crops that cannot be harvested mechanically and may also require transplanting, pruning, hand weeding (hoeing) and harvesting on several occasions.

Farm investments

Farmers are often tempted to make investments that are expensive but do not improve significantly the financial viability of their farm. This needs to be avoided. Decisions should have as priorities investments that can: assure an income, through reducing risk; increase incomes by improving prices; improve incomes by increasing yields; reduce production costs; or generate additional income.

/nvestments that can improve yield stability and hence reduce risks include:

- those that protect against pests and diseases, such as sprays and a sprayer;
- irrigation and other technology that reduces the adverse effects of the weather.

Such investments are particularly important in horticulture because when yields are low as a result of poor weather or pests, prices rise significantly. The grower whose yields are least affected makes the most profit.

Investments that improve prices include:

- technology for 'off-season' production, such as polythene tunnels and improved transplant technology;
- investments made directly in improving marketing, such as grading facilities, on-farm storage, pick-up trucks to transport produce and telephones to improve market communication;
- investments that improve the quality of produce, (e.g. irrigation, crop protection or high-quality planting material).

Investments that increase yields are:

- irrigation equipment;
- scientific fertilizer usage (e.g. correct quantities, optimum timing of application, right amounts of different nutrients);
- high quality planting material.

Investments that save on production costs include:

- herbicides and mechanical hoes, which can cut down on labour for weeding.

Investments that can create additional income are:

- processing equipment to add value to products;
- transport, to take products to new markets.

Input supply

The supply of inputs can have a direct effect on profitability. Planting material is particularly important. Consumers can have strong preferences for particular varieties, colours and tastes. For example, in much of the Middle and Near East there is a preference for plum tomatoes (i.e. Roma types). Product colour can also be important, e.g. red apples are sometimes preferred to green or golden varieties. Growers' returns can be improved by ensuring the supply of the correct planting material, and part of your role can be to discuss with nurseries and seed suppliers the varieties they should stock.

Pest and disease damage will seriously reduce a crop's price and its potential shelf life. Sometimes these problems can be solved by the correct crop protection practices. In India, spray programmes were introduced to control scab disease on apples in Kashmir. A crucial step in the successful introduction of this programme was ensuring that agricultural chemical shops had the recommended materials available.

Finance and credit

Critical production constraints are often shortage of working capital and funds for investment purposes. Potential sources of funds, apart from the farmer's own resources, can be divided into two: formal and informal.

Formal sources. These are mainly banks and other types of financial institutions such as credit unions, savings and

credit cooperatives and various types of microfinance organizations. They offer different types of loan products and normally apply market-based interest rates. In the case of banks, they require specific types of collateral in order to grant loans and credits, which, together with often lengthy loan procedures, tend to seriously limit most farmers' access. Providing banks with cost-of-production budgets, detailed information on likely returns and other relevant information about the activity at the time of the loan request will enable them to assess more accurately the risk involved and may shorten the procedures. Credit unions and similar types of member-owned financial institutions are, by their nature, more open to farmers requiring smaller production-oriented loans. But, similar to microfinance institutions, they often face problems in providing large numbers of loans, due to limited funds.

Financial institutions have different rules as to what loan purposes they can cover. Some will only provide input loans whilst others may also offer loans to meet labour costs. In rare cases banks offer marketing loans to farmers. Such loans are needed to cover the cost of harvesting, transport, packaging and even storage of crops. The advantage of such loans is that growers are not restricted in who they sell to, which is the case when they borrow from traders.

In the example given in Table 6, harvesting and marketing costs amount to two-thirds of all costs, and packaging is the single largest cost item. This clearly illustrates the need for loans to cover marketing as well as production costs.

Where growers are under contract to supply produce to an agribusiness (e.g. food processor or exporter), production loans based on the hypothetical value of the crop can be made. These are called hypothecated loans. Under a loan hypothecation scheme the bank, or the processor, advances a proportion of the expected income as production credit (say 50 percent), without seeking any additional security. Loan recovery can be made by the agribusiness, which deducts the outstanding debt from the grower's income. Unfortunately, such arrangements sometimes break down when the farmer decides to sell the crop to someone else who offers a higher price, thus not honouring the initial agreement. In such situations you should discuss with farmers the benefits of long-term reliable outlets for their products, and point out that such benefits may be lost if they seek short-term price advantages in this way.

Informal credit. In many countries the availability of formal funds from financial institutions is very limited and farmers often have to depend on informal sources. Sources of informal credit include moneylenders, family members, friends, traders and input suppliers. Informal loans are often made on the basis of close family links or mutual trust and are free of time-consuming bureaucracy.

In some countries, the most important source of informal credit is often the trader. The role of traders as sources of loans is much misunderstood. Traders provide credit to farmers to secure future supply and, therefore, income. The true costs of such credit to farmers are difficult to determine. Common criticisms are that high interest rates are charged and that growers who have borrowed money are forced into selling their produce at low prices. In some cases this is no doubt true and, in the case of poor prices, farmers cannot switch to another trader or wholesaler. However, the opposite can also apply as farmers, knowing the trader has to buy from them, pay less attention to produce quality. Traders do not normally lend money to farmers in order to exploit them. They lend money in order to ensure that farmers will produce enough of a crop to meet the demand. Loans by traders are recovered simply by deducting the money advanced from value of the sales.

Transport

Without adequate access to transport, farmers are at a disadvantage. They are dependent on visiting buyers. With transport, growers have control over what market the product is transported to and are therefore potentially in a far stronger marketing position. Improved efficiency in transport, e.g. larger loads, quicker turn-around times and better utilization of capacities, are all proven methods of lowering costs and opening new market opportunities.

You can have an important role in helping growers to gain access to transport. This could involve introducing farmers to transporters, planning a collection route and helping organize the initial services.

Growers who do not sell to visiting traders usually have to transport produce to market in hired lorries or pick-ups. The grower generally has to either pay a fixed price for the hire of the truck, no matter how little is transported, or is charged by the box or sack. Both systems can be inefficient.

If the lorry is not fully loaded the costs per unit (e.g. box, bag) go up. Cost savings can be achieved by encouraging farmers to share transport. You could help them to assemble produce on a particular day of the week at specified collection points.

When transport is charged by the unit, transporters will generally overload lorries in order to maximize their income. By assembling produce at one point so as to guarantee full loads, a fixed price for the lorry can be negotiated and the growers can themselves ensure that the transport is not overloaded, and their produce is not damaged. It is difficult to resist the temptation to try to squeeze extra containers into a vehicle and this is often done by traders, as well as by farmers. However, the benefits in terms of reduced transport costs are usually outweighed by losses in terms of damaged produce.

Transporters often overload lorries to maximize their income.

Even the best-packed produce can be damaged

Generally, the larger the individual load (i.e. the larger the truck used) the cheaper the unit cost of transport. For example, in Pakistan, an 8-tonne lorry travelling from northern Punjab to Karachi used to cost 4 000 rupees (i.e. 500 rupees per tonne of produce) while a 20-tonne articulated lorry cost 7 000 rupees for the same trip (i.e. 350 rupees per tonne).

Farmers who are able to make investments in transport mainly buy small pick-up trucks. The unit costs of transport are therefore higher than when hiring space in a larger lorry, but such pick-up trucks do offer farmers the possibility to:

- transport produce to the market immediately after harvest;
- supply transport services to neighbouring growers;
- take produce for sale to farmers' markets;
- make direct sales to retailers and caterers.

Creating market and business linkages

Production possibilities are often underdeveloped because buyers and sellers are unaware of each other's existence. A buyer may be unaware of the products produced by farmers of a particular area or of the products they could produce if a market were available. A group of farmers may sell produce individually to a small-scale local buyer, unaware that a wholesaler is prepared to pay better prices if sufficient volume can be supplied. As noted earlier, you should draw up a list of the buyers, the

agribusinesses and the transporters in your area. This list would need to provide contact names and addresses and explain the products they buy or services they provide. It is important that negotiations are carried on directly between the farmers and the buyers. You can help farmers by providing them with some information in advance, such as terms of business of traders, likely range of prices and other companies worth contacting, but you should not be involved in reaching agreements on their behalf. Box 6 sets out ways that you can help with business introductions and in supporting farmers to overcome problems and set up new trading relationships.

Box 6

Activities to create market and business linkages

Inviting traders to meet with a farmer group.
Where the possibilities of doing business can be explored.

Assisting traders to find new market outlets.
This may involve identifying market opportunities for traders to explore and supporting sales visits.

Creating linkages between a group of growers and a processor.
This could involve finding out the raw material needs of the processor and the likely buying prices. Farmers' interest in working with the processor can be established and both parties helped to develop an arrangement covering production planning, technical and input support, prices and quality standards, delivery and payment terms. Ongoing support can include the monitoring of production and payments and assisting with dispute resolution.

Assisting farmers to overcome transport problems.
This could involve working with a group of farmers and a trucker to develop a transport service.

Promoting new market places.
This could involve encouraging the establishment of an assembly market or a farmers' market in the local town and assisting with its planning.

Providing information and negotiating support to farmers and farmer groups.
Farmers can be assisted by providing them with names and contacts of important businesses such as suppliers of packaging, transport companies, market agents and traders and processing companies. Farmers can be guided as to typical prices, packaging, comparative transport costs, and agents with good reputations.

Supporting the start-up of new trading relationships.
Helping to act as a go-between in the event of disputes and breakdowns in communication.

8 Post-harvest handling

Main points in Chapter 8

TIMING, TECHNIQUES AND CONDITIONS OF HARVESTING

Timing harvesting to get good prices;
Harvesting at the right maturity;
Impact of bad harvesting on quality;
Harvesting at the correct time of day;
Handling in the field.

CURING, DRYING and GRADING

PACKAGING
Types of packaging materials;
When to use packaging;
Types of damage that packaging protects against.

STORAGE
Deciding whether storage is effective or not.

HELPING FARMERS ESTABLISH A REPUTATION FOR QUALITY PRODUCE

POST-PRODUCTION ADVICE

This guide does not attempt to cover in depth the technical details of post-harvest handling of horticultural crops. FAO and others have covered this in many other publications.[2] The main emphasis here is on the commercial implications of different harvest and post-harvest practices. The key issues are:

- maintaining quality;
- maximizing shelf life[3];
- supplying produce when and as the market demands it.

The main way that you can help improve post-harvest handling is by training farmers, both through practical training and by presentations. In the following pages the main ways in which post-harvest techniques can increase farmers' profits are set out.

Harvesting

The timing, techniques and conditions of harvesting can significantly affect prices.

[2] See Further Reading section at the end of this Guide.
[3] Shelf life refers to the time that a product can remain saleable.

Harvesting and prices. Harvesting early in the season can be carried out to take advantage of opportunities for high prices, e.g. cabbage harvested as spring greens, young carrots sold in bunches, green plums and new potatoes. Taking advantage of these short-term market opportunities requires close links with the market.

Harvesting and crop maturity. The shelf life of the crop and its suitability for long-term storage is affected by the maturity of the crop at harvest. The optimum harvesting stage for most crops depends not only on the climate and distance to the market but also on the variety and the growing conditions. When distant markets are being investigated, experiments should be carried out to find the best maturity to harvest fruits. Send samples at different degrees of ripeness and assess which gives the best results. It may be necessary to call in expert assistance to identify whether long-term crop storage could significantly improve farmer incomes.

Harvesting and quality. Growers often do not understand the effect of their harvesting and handling on the quality of the produce when it reaches the market. Once a fruit is plucked from a plant, or a root or leaf vegetable is harvested, it is cut off from its source of food and, particularly, water. The effects of poor treatment normally show themselves some days later, when the produce is being presented for sale or is in storage. This can often result in disputes, because farmers have sent to market what they consider to be good quality products but by the time these arrive at the market the trader sees produce that has deteriorated badly. An example of this comes from Tonga, in the South Pacific, which used to export capsicum (green pepper) to New Zealand. When the fruit left Tonga they appeared to be in excellent condition but after four days in a ship they arrived in very poor condition. The problem was traced to the use of dirty knives for harvesting.

Harvest timing and marketing

The storage of root vegetables such as sweet potatoes, carrots, onions, garlic, potatoes and yams is generally improved by harvesting them when they are fully mature.

Some root crops, such as cassava and carrots, can be harvested over an extended period as they can be left in the ground.

Melons have to be harvested at the correct stage; too early and the full sugar content is not developed, too late and they lose sugar and become soft.

Some fruit, such as bananas, pineapples, mangoes and avocados, are harvested when they are not ripe in order to transport them to distant markets.

Fruits that are suitable for long-term storage, such as apples, pears, citrus and grapes, often have specific requirements as to harvesting time, depending on variety, growing region and, sometimes, the season.

Poor post-harvest handling leading to low quality produce has two effects; firstly the price is reduced and, secondly, the reputation of the production area is, over time, diminished (again tending to result in lower prices). Improved harvesting and handling of produce will result in a product with better appearance and shelf life and thus better prices.

Time of day for harvesting. Ideally, harvesting should take place when the crop and the climate are coolest and the plant has the highest moisture content. This is in the early morning but other issues have to be taken into account. For example, labour and transport may not be available early in the morning. If transport is a problem the harvest should be rescheduled to avoid produce being left standing in the field for too long. Specific crops often have ideal harvest times. For example, citrus should not be picked until the dew is dry. The best time for harvesting mangoes is mid-morning, when the latex flow is at a minimum.

Field containers. Bags or baskets attached to the waist of the picker enable both hands to remain free. The crop damage associated with moving sacks of produce through the field is thus reduced. When using bags it is preferable to be able to release the bottom so that the produce can be let out gently, rather than up-ending the bag. Containers must be emptied carefully to minimize drop heights and fruit-to-fruit damage. Containers should be cleaned as often as possible.

Harvesting techniques

Harvest fruit on high trees with a hook and a catching bag on a pole, to prevent the fruit falling to the ground and being bruised.

Harvest lettuce, cabbage, sweet pepper, egg-plant, melons and bananas using cutting tools.

Fruit ...
should be harvested by using the palm of the hand, not by holding the fruit with the fingers. Whenever possible, the harvesting should be carried out by plucking the stem, for example, in the case of strawberries, fine beans and peas.

Leafy vegetables ...
are harvested by cutting the plant with a sharp knife as close to the root as possible.

Bulb crops ...
such as garlic and onions, are harvested by pulling the leaves at the neck and then cutting the leaves about 3 cm from the bulb.

Tuber and root crops ...
are normally harvested with forks or hoes. The digging should start some 15 cm (6 inches) away from the plant. It is preferable to lever and pull the roots rather than attempt to dig them out. Harvesting is easiest when the soil is relatively dry, as both damage and the need for washing is reduced.

Using baskets or boxes with sharp or rough edges should either be avoided or the containers should be lined with paper or leaves. Damage is often caused by transferring produce from one container to another. If possible, produce should be harvested directly into the container in which it will be stored and/or transported.

Improving shelf life in the field

With highly perishable produce, damp cloths placed over the top of the field carton help give protection against the sun's heat. Some leafy vegetables may be sprinkled with water at intervals, to maintain leaf moisture.

Field containers should be removed to a shaded area as soon as possible. Shaded field-assembly points, made out of natural materials or a canvas tent, should be used in order to keep the produce cool and allow ventilation.

Drying and curing

Drying is used mainly on bulbs in order to extend shelf and storage life. Crops such as onions and garlic can be dried in the field over about six days, by being spread in a single layer. Alternatively, drying can take place under cover in stacked, shallow trays. The aim is to harden the outer scales and remove moisture from the neck of the bulb, in order to extend storage and marketing life.

Most root crops 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 of products like potatoes and carrots.

Grading

Grading is carried out so that:

- disease-free and blemish-free produce can be selected for long-term storage;
- top-quality produce can be selected for transport to distant markets;
- produce can be separated according to quality, ripeness, colour and size. Separated produce is packed into different containers to facilitate marketing to consumers with differing quality requirements.

Grading is sometimes carried out on the ground under the shade of a tree. This is both unhygienic and inefficient. Specialist grading areas or sheds are generally open-sided with tin or, preferably, thatched roofs to provide shade. Standing or sitting at tables enables people to grade quickly. Tables covered with polythene sheeting are easy to clean and the sheeting can be replaced cheaply. Lighting should be good. Tin roofs can be painted white to reflect heat, while water trickling down the outside of a shed helps reduce the heat inside the building.

Packaging

Good packaging design enhances the attractiveness of produce, enables it to be handled and marketed in convenient units, and helps to prevent mechanical damage.

Mechanical damage. The four main types of mechanical damage are cuts, compression bruises, impact damage and vibration rubbing.

- *Cuts.* Care in harvesting and handling will help eliminate cuts and wounds. Lining of packaging with paper or leaves can also prevent damage to the contents.

- *Compression bruises.* These can be reduced by using containers that are strong enough to withstand multiple stacking. The packaging materials need to be particularly strong at the vertical corners. The packaging should also be shallow enough to prevent the bottom layers of produce from being damaged by the weight of produce above. Cartons must not be overfilled or damage will be caused by the full weight of the pile of produce pushing down on the top layer of fruit or vegetables, causing the weight to be transmitted to the lower layers.

- *Impact damage.* Shocks in transport or dropping of containers can result in this kind of damage. Dropping may occur either because a package is small enough to be thrown or because it is too big to be easily handled. A packing unit should not exceed 50 kg as this is the maximum weight that can be easily handled. Package size specifications usually depend on the customers' requirements, although in many countries the supply of good packaging materials is limited and buyers may have to accept what is available.

- *Vibration rubbing.* This kind of damage generally occurs during transport. It can be significantly reduced by preventing the produce from moving within the packaging while, at the same time, ensuring that fruits or vegetables are not forced together. Fruits can be prevented from rubbing against one another by the use of cellular trays, individual wraps or cushioning pads. An example is the use of paper and straw to separate layers of apples. An alternative approach is for the container to be gently shaken, in order to settle the produce, with the space created then being filled.

Packaging materials. Packaging can be the single most expensive cost, as the calculation in Table 6 showed, particularly with non-returnable containers made of wood or cardboard. The benefits of packaging must clearly justify the investment. An example of such a calculation is given in Figure 13. Traders usually aim to minimize costs and are reluctant to invest in packaging unless the financial benefits are clear.

Figure 13

A cost-benefit analysis of packaging

Assume 6 000 kg of cucumbers are produced. Market price is $0.30 per kg and packaging costs $0.05 per kg. The other marketing costs are $0.05 per kg so the net revenue is $0.20 per kg. With packaging there are no losses. Without packaging the losses vary, as does the selling price. A cost-benefit analysis needs to take into account both price differences and losses and the calculation is therefore a bit complicated.

	CASE			
	A	B	C	D
Net revenue — packaged sales ($0.20 per kg x 6 000 kg)	1 200	1 200	1 200	1 200
Net revenue — unpackaged sales				
Losses 10% Market price $0.26	1 104			
Losses 10% Market price $0.27		1 158		
Losses 5% Market price $0.26			1 182	
Losses 5% Market price $0.27				1 242
Use packaging	**YES**	**YES**	**YES**	**NO**

Note: In calculating the impact of losses the value of the lost produce is the gross value, which includes transport costs, because these will be incurred even though the produce is wasted. The net revenue to the farmer for unpackaged sales is calculated as follows:

6 000 × (Selling price – Transport costs) – Cost of Losses
(Price × 6 000 kg × the loss expressed as decimal [i.e. 10% loss = 0.1]).
So, where losses are 10% and the market price is $0.26 then the calculation is
(6 000 × ($0.21) = $1 260 – ($0.26 × [6 000 × 0.1] = $156) = $1 104.

Five types of packaging materials are listed below.

- *Locally available natural materials* (e.g. wooden boxes or trays, baskets woven from bamboo or willow or cartons made from thin strips of wood or rushes). While use of local materials is normally recommended, overuse can have negative consequences for the environment. In northern India, for example, there have been problems of deforestation because of the use of trees for wooden boxes for apples.

- *Fibreboard/corrugated cardboard* are increasingly being used, particularly in developed countries.

- *Plastic crates* are expensive and generally have to be imported. They have the advantage of being re-usable but a system needs to be in place for the containers to be returned to the farms to be refilled.

- *Bags and nets* are cheap but provide no protection from damage. They are used to package onions, garlic, cabbages and potatoes.

- *Plastic and paper* are often used as lining or wrapping for produce.

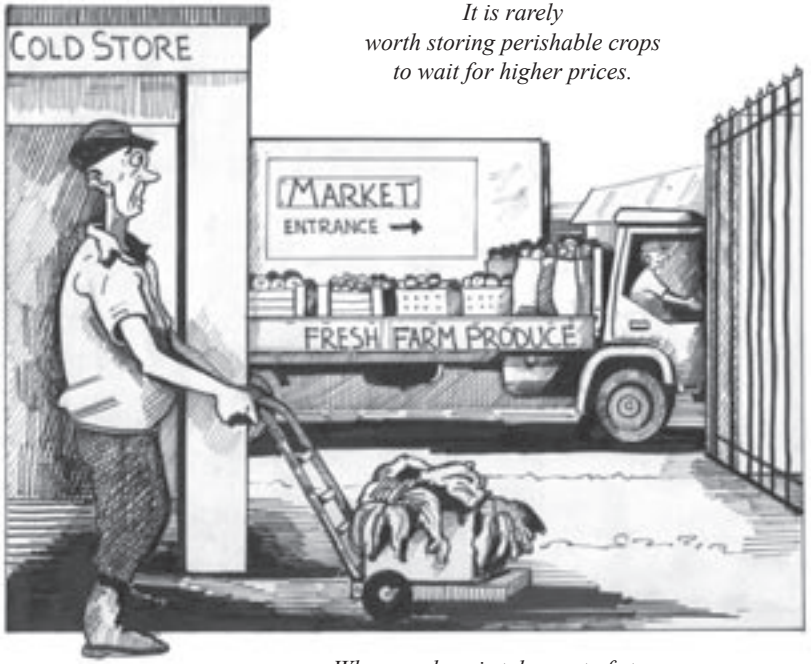
Packaging presentation. Attractive printing and brand names can add value to fresh produce but only in markets where consumers are wealthy and appreciate aesthetics and image. In the produce markets of the Arabian Gulf and Southeast Asia multi-coloured printing is common because it helps to sell the produce and lift prices.

Storage

Produce can be stored for both short-term and long-term purposes. Short-term storage is mainly used to provide flexibility in marketing (e.g. 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 perishable crops to await higher prices, as storage will reduce quality and shelf life whilst adding to costs. Storage is costly and, in most instances, when the produce is withdrawn from storage it has to compete in the market against much fresher produce.

A few crops are adapted for long-term storage. These can be held in store well beyond the normal harvesting period. When they are eventually sold higher prices can usually be obtained and, by extending the marketing season, a larger volume of produce can be marketed. Often, the most successful stores are located in urban areas because:

- produce can be released rapidly onto the market when prices increase;
- refrigerated facilities in urban areas can also be used for a variety of products (e.g. apples in the winter, citrus in the summer, butter and other milk products).



It is rarely worth storing perishable crops to wait for higher prices.

When produce is taken out of store it has to compete with fresh fruits or vegetables.

Refrigerated storage is expensive and can only be justified if it can be run profitably. This requires an adequate demand for storage, good management and a reliable supply of electricity.

Shelf life can, however, be extended without investment in expensive storage equipment. The first priorities should be selecting high-quality produce (i.e. free of bruises, pest and disease damage), maintaining a high humidity and keeping produce in the shade.

In the right conditions, with good management, ventilated stores can be extremely cost-effective, especially for potatoes and onions. Ideally they require cool temperatures at night.

Improving farmers' returns

Emphasis has been given here to improved handling, grading and packaging. Improved prices can result from the quality of an individual consignment. In the longer term, groups of farmers can obtain premium prices by establishing an identity and a reputation as consistently high-quality suppliers by:

- applying minimum grading specifications for a top-quality product;
- grading to this standard;
- agreeing on a name, symbol or 'brand' image, which can be printed on the packaging;
- agreeing that they will only send high-quality produce under the brand name;
- requiring all growers to mark branded packages with their own identification marks so that any produce which is below specification can be traced back to the culprit.

There are many examples of production areas that obtain premium prices because of their reputation for supplying quality produce, but it is important to remember that a reputation that takes years to establish can be quickly destroyed by one or two poor consignments.

9 Improving marketing arrangements

Main points in Chapter 9

WAYS OF HELPING FARMERS TO DEVELOP NEW MARKETS

Linking farmers with buyers;
Promoting collection centres and village markets;
Encouraging group marketing;
Working with cooperatives.

HELPING FARMERS WITH NEGOTIATING AND SELLING

The need to be well informed;
Meeting the needs of processors;
Contracts with processors and others.

USING MARKET INFORMATION

In the short run;
In the long-term.

CARRYING OUT TEST MARKETING

THE PRODUCTION-MARKETING CHAIN

One of the vital roles of an organization trying to assist farmers to improve marketing is to oil the wheels of the production-marketing chain, that is, to help the businesses in the chain operate more efficiently. Very often, marketing chains are not coordinated and the participants can be blind to the existence of others and their needs, problems and opportunities. You have an important role in creating opportunities for buyers and sellers to meet, to share information, to exchange ideas and to explore trading opportunities.

Helping farmers develop markets

Linking buyers with sellers. Buyers are not always aware of all the alternative sources of produce that may be available to them. Producers often do not appreciate the range of potential customers for their produce nor how the market wants products presented and what the prices are likely to be. One of the most important roles that you can play is to create linkages between buyers and sellers. This can be done in a number of ways, including:

- providing contact information and introductions to potential trading partners;

- creating a forum where buyers and sellers can meet (e.g. at farmer meetings, seminars, training sessions, trade fairs). Most important business discussions occur informally, for example at tea or coffee breaks or lunch;
- helping traders to access new market opportunities by providing marketing advice and research findings;
- introducing buyers and sellers.

Establishing collection centres. Collection centres enable produce to be assembled in volume. This attracts buyers and creates competition between them. Better prices are realized and economies can be achieved in transport.

Where unorganized shipments of produce are being made to a distant market you can consider promoting a collection centre. You could do this by:

- identifying a suitable location (i.e. one that is accessible to both producers and traders);
- agreeing with local growers to organize harvesting and deliver their produce to the assembly points on a specific day of the week;
- informing buyers, agents, wholesalers and truckers of when and where farmers will assemble;
- encouraging growers not to compete with one another on price.

Farmers' markets and village markets. Farmers' markets enable farmers, or groups of farmers, to sell produce directly to retailers or individual consumers. In Egypt and India, for example, successful village markets have been established. They operate on a weekly basis and enable farmers to sell either directly to consumers or to wholesalers' agents who take the produce back to the city markets.

By working together to assemble produce in one place, farmers can attract traders and reduce their marketing costs.

In India knowledge of local market (haat) requirements is good and the need for new markets can be accurately assessed. About two-thirds of all new markets go on to thrive (see Case study 3).

Group marketing. Establishing new outlets for growers increases the efficiency of traders and enables farmers to build up an understanding of what they need to produce to meet the demands of the market. When farmers have sufficient mutual trust there is scope for them to work informally together as groups to improve their sales. The first step in this process is for them to understand the benefits of working together and to develop commitment to coordinating their activities. These ideas are best developed collectively with the farmers. Possible ways that farmers can work together include:

- consolidating loads to facilitate bulk buying by traders or bulk transport;
- sharing transport to reduce costs;
- joint negotiations with buyers;
- collective purchase of inputs to reduce costs.

In Bangladesh, about 90 percent of the farmer groups given marketing training developed collective marketing activities. These ranged from using mobile phones to call traders when the farmers had sufficient volumes to sell, to delegating group members to take produce to sell in markets or to agribusiness concerns.

Cooperatives. In many countries cooperatives have been formed to market produce on behalf of farmers. An effective cooperative can increase the chances of small farms remaining viable as the market becomes more developed and demanding investments in post-harvest equipment are required (e.g. grading and packing for export or to supply supermarkets). This guide gives several examples of informal cooperation between growers. When considering the formation of a more formal cooperative you should take into account:

- the importance of producers retaining control. This is ensured through the cooperative's constitution. Either "one-person-one vote" or share capital linked to area of land farmed is desirable as the basis for decision making;
- the need to employ efficient and well-motivated staff, particularly at senior management level. Many cooperatives have failed by employing the wrong staff or paying the right staff inadequate salaries. Marketing requires a business mind. Successful cooperatives have often been established by linking the manager's salary to turnover and/or to the net sum paid to members;
- a properly equipped cooperative must have the necessary facilities and equipment to carry out its objectives, but should avoid building up too high a level of overheads.

FAO/17493

Cooperative activities are born out of necessity,
when growers recognize that their survival depends
on the collective negotiating strength that working together can provide.

L. Dematteis

Working together should come about as a result of a need felt by farmers to cooperate and should not be imposed on farmers by outside bodies.

Negotiating and selling

For the grower the most critical moment in the production/marketing chain is agreeing on the price with the buyer. This is when the farmer discovers whether all the effort and money invested in growing the crops has been worthwhile.

You have an important role to play in improving farmers' negotiating strengths and in training them in the art of selling. The nature of business is that both buyers and sellers try to maximize their profit. To do this requires information, but farmers are generally the least well-informed in the marketing chain. A well-informed farmer who has some basic negotiating skills will usually obtain better prices than less-well-informed farmers.

The strength of farmers during negotiations can be increased by the following:

- being informed of the range of buyers available;
- growing crops for which there is a strong demand;
- being aware of prevailing market prices and conditions and how to relate these to farmer prices;
- knowing the break-even cost of production and marketing (see Figure 12).

You may be able to assist farmers to do the above by providing information, as well as by helping groups to negotiate with buyers and to draw up contracts.

Traders and other intermediaries can sometimes take advantage of farmers:

- on the weight of the crop;
- on the comparative quality of the produce;
- when calculating the money due to farmers;
- by inaccurately representing the state of the market (prices, supply, demand).

These kinds of problems can be reduced by identifying honest traders in the first place. The accuracy of scales can be tested. For large scales an effective method is to test if they measure your own weight accurately. By sharing information about the reputation of traders, growers will learn which traders to trust.

A processor can, with your help, introduce a system whereby selected farmers grow specifically for the factory. Suitable farmers can be identified and formed into a group or groups to:

- introduce improved production techniques;
- design a production programme;
- receive training in improved harvesting, handling, grading and packaging techniques;
- agree on firm prices for the produce;
- coordinate the supply of packaging materials and transport.

Using despatch notes to improve price transparency

When produce is sent to wholesale markets to be sold on commission, despatch notes should be used. They are printed with four copies:

one to be retained by the producer,
one for the trucker, and
two for the commission agent.

All despatch notes should be numbered in series. The producer can check with the commission agent daily by phone to learn how sales are progressing and can note on his or her copy of the despatch note the individual selling prices. When the whole consignment has been sold the commission agent should return one copy of the despatch note with the selling prices recorded, along with the money.

Helping agribusiness to work with farmers

You can carry out a vital intermediary role between your farmers and agribusiness concerns, such as fruit and vegetable processors. This can include organizing farmers to coordinate production, providing training and supporting growers in negotiating contracts with the company.

Different types of contract

Firm Purchase
Price is agreed in advance. Volumes are also agreed on.

Minimum Guarantee
A minimum price is agreed on and a bonus paid after the agribusiness has sold the fresh or processed product, depending on the profit made.

Joint Account
The risks are jointly shared between the agribusiness and the grower. Profits or losses are equally divided between the two parties.

Commission
The agribusiness sells on behalf of the grower and deducts an agreed commission.

Contracts. Contract farming is becoming more common as agriculture develops[4]. It has the advantage of reducing price fluctuations and therefore risk, both for growers and buyers. Contracts are generally formed between farmers and agribusinesses that need an assured supply of raw material. However, problems can arise when there is a significant difference between the contract price and the price on the open market. Growers are then tempted to make short-term profits by selling to others[5]. This is generally a short-sighted practice because it discourages the agribusiness from working with those farmers again.

Using market information
An effective marketing chain not only takes produce out of rural areas and returns money, but should also provide an ongoing stream of feedback to farmers on the state of the market. This information should keep producers in touch with the changing needs of the markets. Such knowledge enables farmers to be confident in negotiations, and provides insight on how the quality and prices of their produce compares with the competition.

Market information can be divided into short-term information, which helps farmers make instant marketing decisions on selling their products, and longer term market information, which can be used to make planting decisions and plan marketing strategies.

Short-term information includes:

- up-to-date price information;
- up-to-date information on supply and demand.

Government market information services have been set up in many countries but they have experienced problems. They are costly to run. The information is not always accurate. The time taken to process information often means that the market news provided is out of date

[4] see *Contract Farming – Partnerships for growth*, FAO Agricultural Services Bulletin 145
[5] This is variously known as extra-contractual marketing; side-selling; pole-vaulting ...

by the time it reaches the farmer. These days, the most important source of information in many countries is often the telephone. Buyers and sellers contact each other and provide instant feedback on prices, supply and demand. Access to telephones, particularly mobile telephones, is increasingly important for market-oriented farmers.

In the absence of telephones farmers should be encouraged to share market information. For example, when they return from a visit to a market, they should circulate news on prices and opportunities to other growers in their neighbourhood. Some extension workers have organized notice boards where farmers can post information about market conditions.

Longer term market information includes:

- quarterly or annual price reports from market information services;
- product and trader fact sheets;
- contacts of companies providing services (e.g. transport, storage), and inputs (e.g. seeds, fertilizers and packaging);
- descriptions of the marketing chain and how it operates.

This kind of information helps farmers decide which crops to grow, how they might market their products and which companies to sell through. Some of the information may be available from directories, catalogues and trade magazines. This specialist information needs to be drawn together from different sources and is not likely to be easily available.

Test marketing

A new trading activity, whether it is selling to new buyers or marketing new products, provides opportunities for additional rural incomes. It is also a period of risk, when there are high chances of problems occurring. You, as an extension agent, have an important role in:

- ensuring delivery of samples to potential new buyers (most traders want to see examples of the product);
- organizing a test-marketing programme if the trader responds positively and the financial returns look promising. This is done by marketing small volumes of produce over a period of time to provide an opportunity to resolve problems in the system, such as payment arrangements, transport connections and quality issues. Test marketing can also establish whether the trade is likely to be profitable in the long term;
- resolving disputes, ensuring that communication occurs between the trading partners and preventing any misunderstandings from arising.

Ultimately, trading relationships have to be based on trust. The test marketing phase allows mutual trust to develop and permits the parties to understand one another and how they operate.

ANNEXES

Annex 1 — Part 1
Farmer questionnaire

Completed by.....
Date.....

Name of farmer.....

Location of farm.....

Brief description of the farm.....
.....
.....

Resources

Area of farm.....
.....
.....
(total, farmed, irrigated)

Equipment used?.....
.....
.....

Access to water.....
.....
.....
(distance from farm, irrigation techniques)

Inputs (seed, fertilizer, herbicides)
purchased and from where purchased.....
.....
.....
.....
.....

How many people work on the farm?.....
.....
.....
.....
(self, family and any hired workers)

Production

What are the main crops grown for sale?.....
.....
.....
.....
.....
.....
(identify the main crops actually sold, rather than consumed,
and the percentage of total output represented by market sales)

What are the main production problems faced?.....
.....
.....
.....
.....
.....

Marketing

How are crops/products sold?.....
.....
.....
.....
.....
(visit by trader to farm, taken to local market or major market, etc.)

How does the farmer decide what prices to ask for?.....
.....
.....
.....

What are the main problems with marketing?.....
.....
.....
.....

Who are the most important buyers of each product locally?.....
.....
.....
.....

What improvements would you
like to see made to marketing arrangements?.....
.....
.....
.....
.....

Annex 1 — Part 2
Farmer marketing arrangements

Product.....
.....
(identify product for more detailed investigation)

Product information

Total yield.....

How much of your total production is sold?.....

Volumes sold annually?.....
.....
.....
(increasing or decreasing sales)

Seasonal supply.....
.....
(start, peak and end of season by month)

Packing.....
.....
.....
(weight of produce per packaging unit, type of packaging)

Are any grading and quality standards applied?.....
.....
(size, colour, moisture, variety)

Usual prices and range of prices.....
.....
.....
.....

(average price, maximum and minimum prices,
variability between season, price varies according to grade)

Costs of production? …….....
.....
.....
.....
.....
.....
.....

(cultivation, seeds, fertilizer, irrigation, weeding and herbicides,
pests and disease control, labour for seeding/planting, crop management,
spraying, irrigation, harvesting, grading, packing)

Transport (for trader and farmer)

How is transport organized and carried out?.....
.....
.....
.....
.....

What volumes are carried on each trip to the market?.....
.....
.....
.....

What are the costs per package
used for transporting produce to the different markets?.....
.....
.....
.....
.....

What are the transport problems faced?.....
.....
.....
.....
.....

Packaging, storage and processing (farmer and trader)

Type and size of packaging material,
and how much does it cost?.....
.....
.....
.....
.....

Storage arrangements, if any. Where, how and by whom?.....
.....
.....
.....
.....
.....

(on farm, cooperative, farmer group,
in market, by end user, type, cost)

Business

How is the crop marketed at present?.....
.....
.....
.....

Who are the most important buyers and why?.....
.....
.....
.....

(different types of buyers the farmer can sell to)

Which buyers have the best reputation?.....
.....
.....

Is there competition between buyers?.....
.....
.....
.....

Do farmers provide credit to buyers?.....
.....
.....
.....

When do buyers pay?.....
.....
.....

What are the main markets where produce is sold?.....
.....
.....
.....
.....
.....

General points

Is this crop profitable?.....
.....

Is there opportunity for selling more products?.....
.....
.....

How can the profitability of the crop be improved?.....
.....
.....
.....
.....
.....

How do you know what price to sell your crops at?.....
.....
.....
.....
.....
.....

(word of mouth; market information, radio)

Annex 2

Trader questionnaire

Interviewer.....
Date.....

Contact.....
Position.....

Name
and address of business.....

Company activities.....
.....
.....
.....
.....
.....

(main products handled, who sells to whom,
services provided such as cold storage, collection,
delivery, credit, packaging, grading)

Company resources.....
.....
.....
.....
.....

(Transport, cold storage, wholesale outlets, retail outlets)

Procedure for doing business.....
.....
.....
.....

(Are products collected or delivered by the farmer? Commission or fixed price purchases? How/when are prices agreed? Payment terms?)

Products in demand or in short supply
.....
.....
.....
.....

(products needed in greater volume and when,
product specifications, likely prices)

Main customers.....
.....
.....

(Are sales increasing, flat or declining?)

Main difficulties as a business?.....
.....
.....
.....
.....

How traders want to work with suppliers?.....
.....
.....
.....

What are the major
businesses trading in fruit and vegetables?.....
.....
.....
.....

Trader product information

Product.....

Volumes sold.....

(total per year)

.....
.....
.....

(high or low monthly or weekly examples)

Estimated total size of market.....
.....
.....

(try to establish the overall volume of sales in the area, town, city,
and the relationship between supply and demand)

Major suppliers.....
.....
.....
.....

(What are their seasonal or unique selling points
and do you experience any problems with them?)

Product specifications.....
.....
.....
.....
.....

(variety or description)

Grading or quality standards.....
.....
.....
.....
.....

(degree of ripeness, colour, flavour, sizes,
acceptable level of faults)

Packaging.....
.....
.....
.....
.....

(type of packaging, size,
net weight of produce, necessary printing)

Reasons for price variations.....
.....
.....
.....
.....
.....

(buying, selling, range, impact of seasonality)

Typical prices per month

Jan_____	Feb_____	Mar_____	Apr_____
May_____	Jun_____	July_____	Aug_____
Sep_____	Oct_____	Nov_____	Dec_____

Factors affecting sales.....
.....
.....

Sales trend.....
.....
.....

(Have sales been increasing, decreasing or flat over the last two to three seasons?)

Are additional/new supplies required for this crop?.....
.....
.....

When and how much of additional supplies are required?.....
.....
.....
.....

Trader's recommendations
regarding how new suppliers can become involved.....
.....
.....
.....

Transport

How is transport organized and carried out?.....
.....
.....
.....

Volumes and costs involved.....
.....
.....
.....

What transport problems are experienced?.....
.....
.....
.....

Packaging, storage and processing

Type and size of packaging material.....
.....
.....
.....

(who owns it or who supplies it and costs)

Storage arrangements, where, how and by whom?.....
.....
.....
.....
.....

Annex 3
A summary of marketing extension techniques

Potential activity	Marketing education	Market linkages	Coordinating activities
	Pre-production activities		
Market-Orientated Production Production is based on demand for a particular quality, variety, season and packaging.	Training farmers in what the market wants in terms of product and marketing system. Using successful farmers to explain their business strategies and techniques.	—	Organizing successful farmers to meet with others.
Crop Budgets/Prices Calculation of potential returns of different crops, and how profitability can be improved through improved marketable yield, higher prices and lower costs.	Farmer education to present alternative crops, their potential returns and how they can be improved. Use farmer meetings, or work with farmer associations or groups.	—	Farmer meetings
Input Supply Profitability can sometimes be achieved by ensuring the provision of specialist inputs (e.g. planting material of the varieties/cultivars demanded by the market, sprays that control specific pests and diseases).	Advice, via the agricultural extension service or buyers, on improved production techniques.	—	Advising local agribusiness suppliers of needs for specialist inputs by farmers (i.e. specific varieties, particular sprays, technologies).
Finance and Credit Farmers often need sources of production finance. Traders, formal and informal sources can supply this finance. The terms are often different.	Explaining to farmers the range and costs and benefits of alternative sources of credit, including informal credit.	—	Advising local agribusiness suppliers of needs for specialist inputs by farmers and the willingness of local financial institutions to finance these.

Potential activity	Marketing education	Market linkages	Coordinating activities
	Pre-production activities, continued		
Investment Advice Technology (e.g. irrigation, greenhouses or sprayers) can increase profitability.	Potential marketing and financial benefits of investment in new technology can be explained. Farmers who have introduced the techniques or technologies can give talks.	—	Advising input suppliers and local shops on the improved technology and inputs that farmers will want to buy. Organizing farmers to explain their technologies to others.
	Post-harvest and distribution		
Harvesting Best practices on when to harvest, how to harvest and reduce losses and how to maintain quality.	Farmer training and practical demonstrations.	—	Planning training.
Grading, Packing and Storage Grading and storage can improve prices, while packing can also help reduce damage and improve prices.	Farmer and trader training and practical demonstrations. The provision of information on grading and packing standards.	—	Ensuring that packing material is available from local sources. Working with local manufacturers of packaging.
Transport and Distribution Access to transport services can give farmers greater control over the marketing of their produce.	Working with farmers to consider ways of reducing costs. Providing lists of transporters and indications of typical costs.	—	Organizing farmers and transporters to develop lower-cost, more-reliable transport connections through load consolidation, regular collections, etc.

Annex 3, continued

Potential activity	Marketing education	Market linkages	Coordinating activities
		Marketing and selling	
Linking buyers with sellers Buyers and sellers are dependent on each other. Buyers welcome both new and potentially better sources of supply, while sellers will want to explore possible new outlets for their produce.	Explaining to farmers how the marketing chain works and how it is changing. Providing lists of buyers and their contacts.	Organizing for traders to meet farmers and farmer groups. Helping traders, exporters and farmers to research and identify marketing opportunities.	Facilitating meetings, through trade fairs, outward seller missions, and inward buyer missions.
Improved communication in the marketing chain When the different links in the marketing chain know each other, communicate well and co-ordinate activities, the process becomes more efficient and they are likely to become more effective at buying produce and circulating money into the rural economy.	Using training to explain to farmers and traders each others' needs, requirements and activities.	–	Creating opportunities for buyers and sellers to meet, discuss and develop ways of increasing sales and overcoming constraints (e.g. at workshops, seminars, training sessions). Much of the important discussion will happen informally between farmers and traders.
Establishing collection centres, local markets, village markets and assembly markets Creating local markets to consolidate products in one place and at one time attracts buyers and sellers.	Explaining to farmers the need for a local market and gaining their support.	Explaining to traders the need for a local or assembly market and encouraging traders to attend local markets.	Identifying the market's location. Liaising with the authorities to provide services. Agreeing the dates/timing of the market. Advising farmers and traders of when it will occur. Supporting the market during the early days.
Working with farmer groups, farmer associations and cooperatives If managed efficiently a group of farmers can be very successful in marketing their products because of economies of scale and negotiating strength.	Discussing and developing with farmers a strategy for improving the marketing of their products. Identifying potential trading partners for the groups	Enabling representatives of the farmer group to negotiate supply contracts with traders.	Supporting the first few trades so that misunderstandings can be resolved and disputes overcome.

Potential activity	Marketing education	Market linkages	Coordinating activities
Marketing and selling, continued			
Working with agribusiness With increased processing the opportunities for supplying the agribusiness sector will generally expand as economies develop.	Helping farmers to understand alternative contract terms.	Making introductions between the farming sector and agribusiness.	Ensuring that the farmers and the agribusiness activities are coordinated and that problems, misunderstandings and disputes are resolved.
Contracts Processors and major agribusinesses often want to contract production to secure supply. This is useful to help improve income security.	Helping farmers to understand alternative contract terms.	Assisting farmers with contracts by providing advice on typical terms.	Linking farmers and farmer groups with agribusiness.
Negotiating and selling Prices received often depend on the negotiation skills and strengths of farmers.	Guiding farmers on how the market operates (supply and demand), negotiation techniques and typical price ranges.	Assisting farmers in negotiating with new suppliers by identifying potential customers for farmers and providing guidance on buying terms.	Providing information to farmers on where they can obtain market information and can contact buyers.
Using market information This includes official, unofficial and informal sources of information, which can help farmers to understand the market. Short-term information helps with decisions on selling while market information over the longer term can influence planting decisions.	Training farmers in how to use and interpret information. Emphasizing the importance of farmers gathering information themselves.	Encouraging farmers to contact traders to obtain market information and prices.	Organizing dissemination of government price information. Providing information to farmers on contacts, markets, products and prices.
Building up new trading activities Sales to new buyers or of new products provide opportunities for growth but problems can also occur.	Planning with farmers a sensible approach to developing sales. Identifying new market opportunities for traders.	Providing samples to interested buyers. Carrying out test marketing to the most promising traders.	Providing on-going support during the early stages of trading to help overcome disputes and misunderstandings. Assisting with market research.

Annex 3, continued

Potential activity	Marketing education	Market linkages	Coordinating activities
		Miscellaneous	
Value-added enterprises With development, opportunities often emerge for value-added products (e.g. snacks, dried fruit).	—	Linking processors with potential trading partners.	Organizing training and linkages with those that can supply the technology.
Crop Development There will be opportunities for more profitable crop production through the use of different or new technology and through new crop introductions.	—	—	Organizing for crop research and development trials to take place and using these for demonstrations to farmers.
Project linkages Opportunities often exist to work with development projects.	—	—	Attract financial and technical support to the area by presenting its opportunities and needs to government, NGOs and international organizations.
Infrastructure The building of roads, bridges and the development of market sites can all be fundamental to economic development.	—	—	Lobbying local and national authorities for investment and support.
Training of Agricultural Officers Most agricultural officers have had little training in marketing as a tool for development.	Providing courses to senior managers, trainers, researchers and extension officers so that they can appreciate the importance of marketing.	—	—

Annex 4 — Part 1

A summary of post-harvest handling issues

Post-harvest handling requires extensive study to be fully understood. This guide only covers some basic principles.

Use publications listed in "Further reading" at the end of this guide to obtain more information.

Production influences on shelf life

(quality and a long shelf life start with production)

Factors that influence shelf life are:

- **Water**
  Too much leads to soft growth and easily damaged produce.
  Too little leads to small sizes and low juice levels.
  Dry followed by wet weather spells can lead to splits or cracks.

- **Fertilizer**
  Incorrect nutrition leads to physiological damage and a short shelf life.

- **Pests and diseases**
  Damage from these shortens shelf life.

- **Crop Maturity**
  Crops harvested before maturity wilt rapidly.

Major causes of crop losses

- **Water loss**
  Plants consist of 65-85% water. Once harvested there is no replacement of water lost. The larger the surface area (e.g. with leafy vegetables) the greater the potential water loss. When 5 to 10% is lost the product visibly wilts and is unsaleable.

- **Mechanical damage**
  This happens at harvesting or results from bad handling. Skin breakages, crushing and bruising all lead to physiological damage and disease infection.

- **Physiological damage**
  When a harvested plant, or part of a plant, is wilted, damaged or attacked by a disease or pest then chemical reactions that can cause unpalatable flavours can occur within the plant tissue. Plant material rapidly ages without fresh water and foods from photosynthesis.

- **Disease damage**
  Damage, whether from bad handling or pest attack, increases the likelihood of attack from a disease, as does moisture on the surface of the produce, which can lead to fungus development.

- **High temperatures**
  The higher the temperature, the greater is the moisture loss. As a result, disease infection will be speedier and the shelf life shorter.

Techniques for reducing crop damage and extending shelf life

- **Reduce water loss**
  Harvest crops when they are well watered; keep them in high humidity, reduce air flow, keep produce cool. The curing of some products (e.g. drying the neck and outer skin of onions, allowing potatoes and yams to develop a thicker skin under warm humid conditions) reduces moisture loss.

- **Do not damage**
  Cut don't pull; hold in the palm not with the fingers; don't drop, be gentle and always handle with care.
  Pack in boxes without sharp edges.
  Use shallow boxes.
  Ensure that there is no excessive weight of produce on top of other produce.
  Make sure that the fruit does not stick out above the top of the box and get crushed.
  Boxes can collapse or become weakened if too many are stacked on top of each other (especially wet cardboard boxes).
  Drive carefully on poor roads.
  For valuable crops use cushioning inside boxes (e.g. trays, paper).

- **Minimize physiological damage**
  Keep produce cool, turgid and undamaged.

- **Minimize diseases**
  Discard diseased and damaged fruit; if necessary treat produce with fungicide; avoid damage; allow sufficient airflow to prevent moisture collecting on the surface of the fruit and vegetables. Keep field boxes clean and do not let produce touch the ground.

- **Above all keep the produce cool**
  Harvest when the produce is cool (i.e. in the early morning) In the field protect the produce from the sun with a damp cloth. Remove from the sun as soon as possible, store under shade.

- **When refrigerating**
  Remove the field heat as quickly as possible and reduce to storage temperature (n.b. every hour that cooling is delayed reduces the maximum shelf life by 10 hours). If produce is refrigerated it MUST be kept in a cool chain until sale, or else moisture will develop on the surface of the produce.

- **When not using refrigeration**
  Keep produce in a cool, dark, humid location.

Harvesting

- Avoid mechanical damage to produce at all times. Keep produce clean, out of the sun and avoid contact with the soil.

- Harvest when produce is cool and not wet (e.g. from dew, rain or irrigation).
- Root crops have less damage when grown on raised beds.
- Leafy vegetables should be snapped by hand.
- Cabbage and lettuce should be cut and trimmed with a knife.
- Loosen bulbs with a digging fork before harvesting.
- To harvest cauliflower and broccoli, cut with a knife.
- Fruit should ideally be cut or, if ripe, 'lift, twist and pull', holding the fruit in the palm of the hand.
- Mature green fruit or fruit with a wooden stalk should be clipped.
- Immature fruit with a fleshy stem (e.g. okra, zucchini, capsicum, and papaya) can be cut with a knife.
- Harvesting bags allow both hands to be free and reduce fruit damage.
- Small plastic buckets are suitable for produce that could be crushed (e.g. tomatoes and beans).
- Bulk bins are used for large-scale transportation of products like citrus, apples and cabbages.
- Transport carefully and slowly over bumpy roads.

Optimium timing of harvest

- **Cabbage**
  Harvest when the head has formed tightly, before the outer leaves start to die or the head shows any sign of splitting. At the correct stage of maturity, freshly harvested cabbage heads should squeak when rubbed together.

- **Cantaloupe melons**
  The fruit should separate easily from the plant. If only part of the stem pulls off then the fruit is not ripe and will never ripen to a full flavour.

- **Honeydew melon**
  Harvest when the fruit is well filled out, there is just a hint of green and the surface is covered with fine hairs.

- **Bananas**
  For export, or sales in distant markets, harvest when still green and only at between three-quarters full (80 days from shooting) to high three quarters (90 days from shooting). The longer the period of transport the thinner the fingers should be at the time of cutting. For local marketing the fruit is harvested when fully mature but before ripening has started.

- **Pineapples**
  For local consumption or canning, harvest 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.

- **Citrus**
  Maturity indices of citrus are based on juice content by volume, total soluble solids in the juices and the solids: acid ratio, according to variety and market. In general, fruits should contain at least 40 percent by volume of juice and the total soluble solids should be above 8%.

- **Apples**
  For storage pick apples when fully mature but not fully ripe.

In the packhouse

- **Grading of produce**
  Grading can only separate different quality products, it cannot improve quality.
- Remove damaged produce or else it will lower overall value and be a source of infection.
- Grade produce according to size and colour.
- Grading is best done by eye.
- Photographs, training and sizing aids help staff doing the grading to get their 'eye in'.

- **Packaging of produce**
  Protects the produce from damage.
  Is a convenient unit for distribution.
  Can be an advertisement for the produce.
  Labels or brands the product.

- **Packhouses**
  The packhouse should be cool, offering shade and protection from rain, but allowing natural ventilation.
  It should be designed to allow produce to flow in one direction.
  Washing should be done in clean, running water.
  Administer fungicide treatment by spraying and/or dipping.
  Dry produce thoroughly before packing.
  Grade and pack produce on tables, never on the ground.
  Store in a cool, shady place. Despatch as soon as possible.

Packaging

- **Locally available natural materials** (e.g. baskets woven from bamboo, willow or cartons made from thin strips of wood or rushes).

Typical problems associated with these materials

Poor rigidity and design, which prevents multiple stacking.
Sharp edges, which can cause bruising or pierce produce.
Inefficient usage of transport space, which increases costs.
Damage to the environment due to overuse of local materials (e.g. cutting down trees to make packing cases).

Advantages of using locally available materials

Material costs are low.
Both jobs and incomes are created for local businesses who make the packaging.
Local sources of packaging also make it easier to obtain and reduce the risk that packaging will not be available.

- **Wooden boxes and trays** are widely used throughout both the developing and developed world.

Advantages of using wooden materials

Strong, rigid and can also withstand refrigeration.
They can be recycled.
They can be manufactured locally.

Disadvantages

Wood is often not available or is very expensive.
Boxes are often not designed or manufactured properly, resulting in poor stacking and ventilation characteristics.
In an effort to save wood, the boxes are made too deep, resulting in damage to the bottom layers of produce.
Improved design is particularly likely to result in both savings in wood and reduced crop damage.
They can be reused but are difficult to clean.

The "European" produce tray has been successfully introduced in a number of countries.

Critical design features of this tray are:

Standard box sizes, particularly length and width, to facilitate stacking.
Using thin strips of wood for the floor and part of the sides but especially strong wood at the vertical corners, as these have to support the weight of the stack.
A gap between the sides of the tray and the floor of the next tray, allowing for ventilation.
No lid but paper placed on top of the produce to reduce the effects of dust, evaporation and to minimize pilfering.
Shallow trays are used for easily bruised crops such as tomatoes, peaches, grapes and mangoes.
Deeper boxes are used for apples and citrus. Larger but flimsier boxes are often used for cabbages and cauliflowers.

- **Fibre board or corrugated cardboard** are increasingly being used. There are a number of cleverly designed boxes that can be copied. Thes boxes are very light and can be easily printed on so to make them look very attractive.

Typical problems associated with these boxes

Boxes are expensive and cannot be recycled.
They need to be waxed to withstand long-term cold storage.
Manufacturing is done by large factories, often at the expense of rural jobs.
Raw materials often have to be imported.

Recent design improvements include boxes that are made from a combination of wood, for structural strength, and cardboard. Plastic has also been incorporated in designs, particularly to increase strength at the corners.

- **Plastic containers** are expensive and generally have to be imported. They have to be returned to the farm after use and are mainly used as field boxes or to supply a regular outlet such as a factory or supermarket.

- **Bags and nets** are cheap but provide no protection from damage. They can be used to package suitable produce like onions and potatoes into convenient units for handling and marketing.

- **Plastic and paper** are often used as lining or wrapping for produce.

- **Printing**, packaging presentation and brand names can all add value to produce but only in markets where consumers are wealthy and appreciate aesthetics and image.

Storage

Produce can be stored for both short-term and long-term purposes.

- **Short-term storage** is used to provide flexibility in marketing (e.g. when awaiting transport, or because buyers are not immediately available).

- **Long-term storage** is suitable for a few crops (see table next page). 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.

Refrigerated stores offer the longest storage conditions for produce, however they have some disadvantages.

They are expensive
They require high quality technical management.
They need electricity and, if supply is irregular, a generator.

Ventilated stores can be extremely cost-effective but require specific conditions

Cool night temperatures.
Buildings should be positioned to intercept the prevailing night-time winds.
Buildings should be protected from the sun's heat (e.g. by using shade from trees, painting the building white or building double-skinned walls).
When the ambient air temperature falls below that of the produce, normally at night, the air has to flow through the stored produce by opening louvres (this process can be automated and fans can be used to increase air flow rates).
Evaporative cooling from the incoming air (i.e. passing through moist air) which assists in cooling and humidifying the store.

Examples of ventilated storage

Potatoes can be held through the winter (three to nine months) provided they have been cured and treated with sprout suppressant.
After drying and curing onions can be stored using the same techniques but with lower humidities, (with onions there are great differences between varieties and production locations);
Garlic can be held for three to four months.
Sweet potatoes need to be cured at 28 to 30°C for a few days. Subsequently they can be stored for up to six months.
Cabbages, carrots, pumpkins, apples, pears and lemons have all been successfully stored using ventilated stores (e.g. in Syria, apples can be stored in caves for nearly 10 months).

Annex 4 — Part 2

Generalized storage advice for fresh produce

Advice	Reason
Harvest produce at the proper maturity stage	Immature produce has thinner skin resulting in faster evaporation
Keep produce in shade	Water losses are four times quicker in sunlight
Store only crops that are clean	Diseased produce may infect sound crops. Damaged produce is easily infected and loses water. Dirt is a source of disease
Remove leaves attached to fruit and root crops	Leaves lose water rapidly
Apply approved sprout suppressant to potatoes, onions, garlic and ginger	Helps reduce sprouting during storage
Wash fruit in chlorinated water (200 ppm), or commercially-available fungicide for about 30 seconds, rinse and dry	Controls fungus disease
Line baskets with paper or leaves, and containers with polythene film with some ventilation holes	All act as barriers to high moisture loss
Store as soon as possible	The quicker produce is cooled, the slower the water evaporates and microbial activity is reduced
Storage rooms and containers should be clean	Reduces chance of infection from previous crop
Allow air circulation	Removes heat and ethylene given off by produce
Separate ripe from unripe fruit	Ripening gives off ethylene which hastens ripening of unripe fruit
Avoid mixing produce in the same storeroom	Odours and gases given off can damage other crops
Store leafy vegetables at a high relative humidity	Dry air rapidly draws moisture out of leaves

Advice	Reason
Cool moist conditions can be created by dripping water through burlap or jute sacks which serve as the wall covering of the cool store	The latent heat of evaporation cools the air. The high humidities lessen water loss
Keep root crops in moist and slightly warm environment for 10 days before storage	This is called curing and hastens the healing of wounds
Bulb crops should be dried or cured until the neck is tight and the outer scales rustle	Diseases, particularly neck rot, are controlled, and moisture loss is reduced
Store roots and bulbs in drier atmosphere than other produce	Root crops sprout easily under moist conditions
Store tropical produce at 10° C or above, and temperate crops at below 10° C	Tropical crops suffer chilling injury at low temperatures
Use containers that can withstand stacking	Optimizes use of available storage space without injuring produce
Maintain high humidities in cold stores by preventing entry of warm air through using plastic strip curtains, keeping doors closed and wetting floors	High humidities for most crops reduce shrinkage and weight loss
Do not store onions in sacks piled to more than six high	To minimize compression damage
Keep potatoes stored in the dark	In sunlight they become green and poisonous
Clean, moist sawdust can be used to store fruit like tomatoes, rambutans and mangoes	High humidities are maintained. Sawdust should be dried before re-use

Annex 4 — Part 3

Recommended transport practices

Advice	Reason
Take products out of the cold store during the cool part of the day	In warm conditions produce attracts condensation. Water creates an environment for microbial attack
Transport produce during the coolest part of the day (dawn or night)	Heat causes faster respiration and water loss
Supervise loading and unloading. Boxes should be lifted or carried, never thrown	To prevent boxes being dropped
Loading can be made easy by the use of loading bays or with steps or planks. Trolleys, conveyors and fork-lift trucks reduce handling	Produce can be carried on and off easily
For loading bulk-transported pineapples, cabbages and melons, the throw-catch system can be used but should involve at least five people	This is acceptable because of the need for speed in unloading and the low value of the individual fruit
Place padding (e.g. cardboard) between stacks of containers	To prevent the load shifting and to help absorb vibration
Provide space between crates for adequate ventilation	To prevent accumulation of heat and gases
Containers should be packed to reduce movement and to distribute weight evenly. Only stack to a height that the bottom containers can withstand without being crushed. Stow goods in reverse order to their unloading sequence	Shifting loads and poor weight distribution damage produce and cause vehicle-handling problems

Advice	Reason
Use white or white-painted canvas to cover the produce	The sun's heat will be reflected from produce
Provide ventilation during transport by raising the canvas cover 20 cm with a plank into a low tent shape	To provide airflow for the removal of heat and gases
Vans should be double-skinned and allow ventilation	To prevent the transmission of heat to the produce
Use horizontal dividers to separate layers of containers in the truck. This system can also be used for bulk transport of such produce as melons, cabbages, citrus and pineapples	Prevents compression damage to the produce being transported. Can be used for containers that do not stack, as well as bulk shipments
Bulk shipments should be cushioned with a thick layer of straw or leaves on the bottom and sides of the lorry	Water melons are transported this way in the USA to prevent damage
Jolting should be reduced by not driving too fast, particularly on poor roads. Long wheel-bases reduce damage, as does air-ride suspension, which is preferable to leaf-spring suspension	Jolting increases crop bruising and wastage, reducing sales income
Vehicles should be properly maintained	Breakdowns result in time wastage and may result in high levels of produce damage
During loading, unloading and when parked the truck should be in the shade	Gives protection from sun and rain

Annex 5
Training of agricultural officers

Marketing, as this guide has argued, is a powerful tool in accelerating rural development. In many countries "marketing" is still a relatively new concept. Traditionally, ministries of agriculture have focussed on supporting production activities. Most agricultural extension officers, both at senior and at junior level, have had little training in marketing as a tool for development.

Senior ministry officers need to understand and support marketing interventions

The most senior marketing specialist in the ministry should therefore brief senior officers on marketing. In these presentations time is normally limited. The presentation needs to be well prepared and focus on key issues, such as:

- the benefits of marketing;
- the process;
- potential marketing activities;
- the planned outcome;
- the resources and support required.

Ministries need to consider how they can train their staff in marketing

A marketing training course for extension officers should not be simply a forum for passing on information. To maintain interest, the courses need to be participatory.

Some of the techniques that have proven successful are:

- structure a course so that the knowledge about marketing builds up, generally starting with an overview and some basic theoretical concepts;
- participants should introduce themselves, and give a short presentation of their views of the marketing problems and opportunities from their own area;
- product specialists can provide short lectures on the marketing of individual products;
- include role play (to enable trainees to practice their new tools and knowledge in a safe environment);
- if possible, organize market visits (to demonstrate the techniques of interviewing traders);
- provide sources of market information (web addresses and media), visual aids/grading samples, (posters, cartoons, photographs) and contact addresses;
- provide a clear list of the marketing knowledge that an extension officer needs to have and what they can do to help their farming clients;
- encourage discussions and the sharing of experiences;
- have daily feedback sessions so that the training course can be modified to respond to needs and complaints;
- ask trainees to give a short presentation at the end of the course on what they have learnt and how they are planning to use what they have learnt in their work.

A training course like this can transform the range of support services that a ministry of agriculture can supply to farmers.

Further reading

FAO publications

1977. The modern farm business, and the farm business survey. FAO Better Farming Series. Rome.

1984. Guide to establishing small packing stations for fruit and vegetables in rural areas. FAO, Rome.

1989. Prevention of post-harvest food losses: fruits, vegetables and root crops – a training manual. Rome.

Horticultural Marketing – a training video, FAO.

Horticultural Marketing – extension techniques (video and DVD), FAO.

1990. Make learning easier – a guide for improving educational/training materials. Rome.

1993. A guide to marketing costs and how to calculate them, by A.W. Shepherd, FAO Marketing Extension Guide, Rome.

1995. Fruit and vegetable processing. FAO Agricultural Services Bulletin No. 119, Rome.

2000. Understanding and using market information, by A.W. Shepherd, FAO Marketing Extension Guide No. 2, Rome.

2001. Contract Farming – Partnerships for growth, FAO Agricultural Services Bulletin No. 145, Rome.

2004. Manual for the preparation and sale of fruits and vegetables, by A.F.López Camelo, FAO Agricultural Services Bulletin No. 151, Rome

Other publications

ITC. 1988. Manual on the packaging of fresh fruits and vegetables. International Trade Centre, UNCTAD/GATT, Geneva.

Kader, A. et al., 1985. Post-harvest technology of horticultural crops. Cooperative extension, University of California

Sargent, M.J. 1973. Economics in horticulture, Macmillan Press.

NOTES

NOTES

The following is a list of booklets published in the MARKETING EXTENSION GUIDE series:

A guide to MARKETING COSTS
and how to calculate them
1993, 59 pp. (E F S)

A guide to MAIZE MARKETING
for extension officers
1999, 111 pp. (E F)

Understanding and using
MARKET INFORMATION
2000, 85 pp. (E F S)

MARKET RESEARCH
for agroprocesssors
2003, 114 pp. (E S)

Planning and designing
RURAL MARKETS
2003, 120 pp. (E S)

HORTICULTURAL MARKETING
2005, 131 pp. (E)

Available in: E — English
F — French
S — Spanish

Series editor: Andrew W. Shepherd

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Horticultural farmers frequently consider marketing as being their major problem. However, while they are able to identify such problems as poor prices, lack of transport and high post-harvest losses, they are often poorly equipped to identify potential solutions. Successful marketing requires learning new skills, new techniques and new ways of obtaining information. Extension officers working with ministries of agriculture or NGOs are often well-trained in horticultural production techniques but usually lack knowledge of marketing or post-harvest handling. This Guide seeks to help them to develop their knowledge of these areas, in order to be better able to advise farmers about market-oriented horticulture. The emphasis is on assisting farmers to form mutually beneficial relationships with private-sector traders and agroprocessors.

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