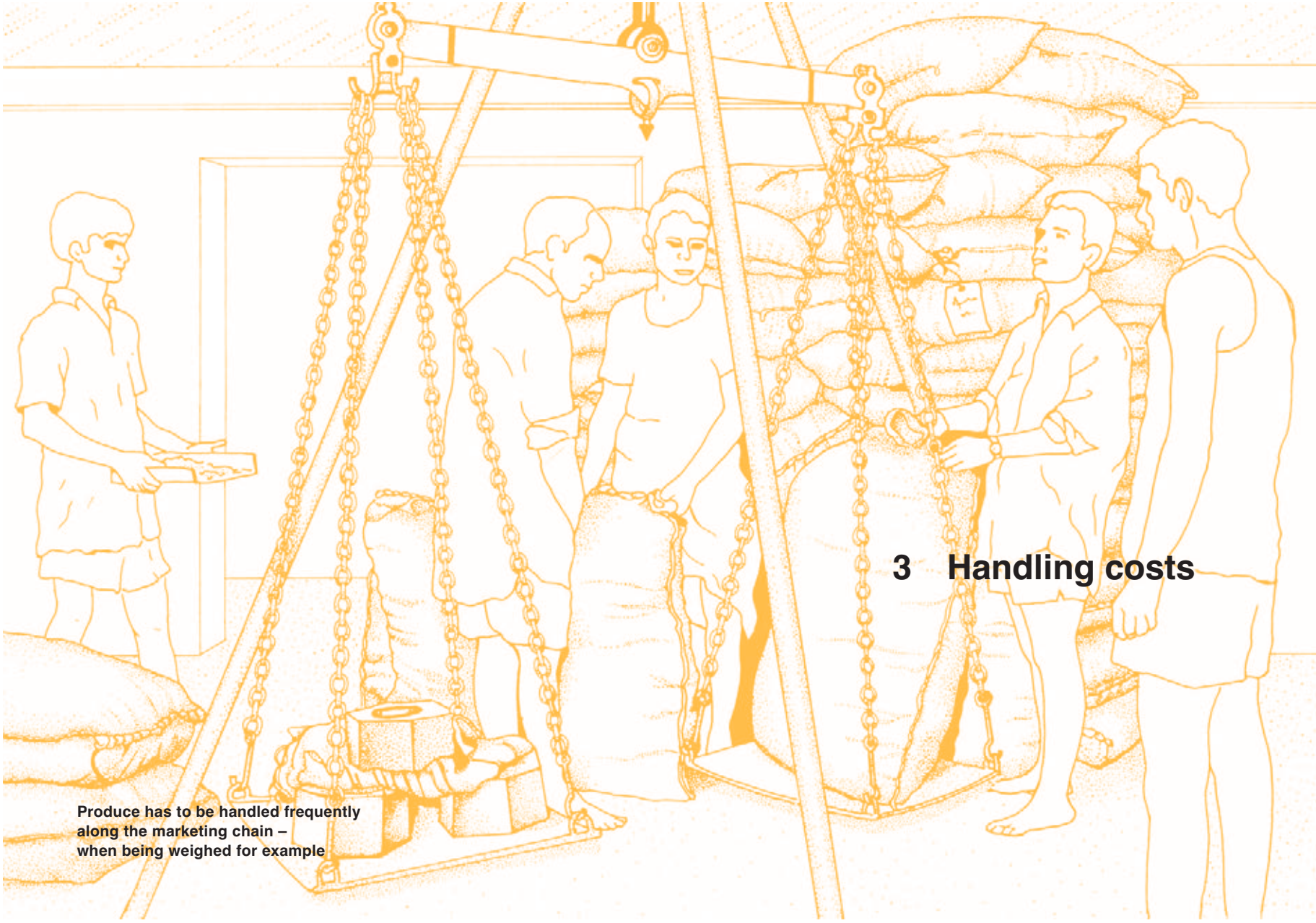


3 Handling costs

Produce has to be handled frequently along the marketing chain – when being weighed for example

It is very easy to overlook handling costs. Each individual time a product is handled the cost per kilogram will be negligible. But a product can be handled many times before it reaches the consumer. The total of all these small handling costs can end up being quite considerable, particularly in countries with relatively high labour costs.

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

Referring to a Farmer-Wholesaler-Retailer-Consumer marketing chain we could have the following individual handlings:

- farmer or labourer loads produce on to ox-cart;
- labourer unloads produce at assembly market and it is weighed;
- wholesaler or employee repackages the produce in wholesaler's containers;
- produce is carried to and loaded on wholesaler's truck;
- produce is unloaded at wholesale market and taken to premises occupied by wholesaler and weighed;
- produce is unpacked and sorted or graded;
- produce is repacked in retailer's containers;
- produce is carried to retailer's transport;
- produce is unloaded at retailer's store;
- produce is repackaged into plastic bags.

Some examples of individual handlings

Farmer loads produce on to an ox-cart

Produce is repacked in wholesale market

Farmers' produce is packed in wholesaler's containers

Stored produce is prepared for transport

4 Transport costs

Trucks unloading
at a wholesale market

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

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

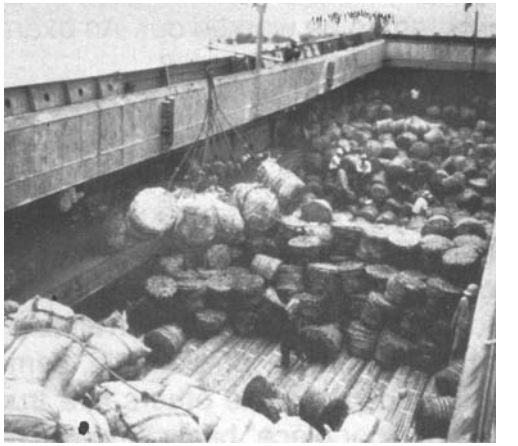
Payment to truck drivers to carry produce to market on a "per piece" basis makes for easy marketing cost calculations but is usually a more expensive way of transporting produce. Truckers have no idea whether they will fill their trucks or not and so calculate their charges "per-piece" by assuming an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

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

In the marketing chain you can find virtually every kind of transport being used

Bicycle

Animal cart



Boat

Pack animal

Truck – train

Plane

the shape of the containers, etc.) can then be divided by the volume of the container, so allowing the cost per kilogram to be worked out. An example of this calculation is shown in Figure 2.

The calculation becomes more complicated when traders own their own vehicles and we have to assess their transport costs. There are so many factors to consider in working out the costs per kilogram for one journey that this is best avoided unless there is no alternative information available to allow the cost to be estimated. If, for example, some traders use their own transport while others hire trucks on a "per journey" or "per-piece" basis then you can use the costs of the latter as a "best guess" of the costs to truck-owning traders.[1]

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

- wages paid to the driver and, where relevant, his assistant;
- cost of fuel, maintenance, repairs and the like;
- cost of licences, road tax, insurance and other necessary payments;
- cost incurred *en route* such as tolls or bribes paid at official or unofficial road blocks and charges for entering a market;
- the capital cost of the vehicle. When working out the yearly cost of operation of a truck you need to include not only the cost of bank interest paid on a loan but also the annual depreciation (or loss of value) of the truck. When roads are bad trucks may last only a few years and thus depreciation will be a major cost.

Having identified annual transport costs it is then necessary to consider the amount of work the truck will do in one year in order to work out a cost per tonne per km. This will depend on:

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

Figure 2
Calculating transport costs

Assume that there are **40 m^3** available in the truck to be used and that it costs **$500** to hire the truck. A container of **0.2 m^3** holds **8 kg** of tomatoes and a container of **0.4 m^3** holds **10 kg** of green peppers. A full truck could hold 200 containers of tomatoes **(40 m^3 ÷ 0.2 m^3)** and 100 containers of green peppers **(40 m^3 ÷ 0.4 m^3)** .

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

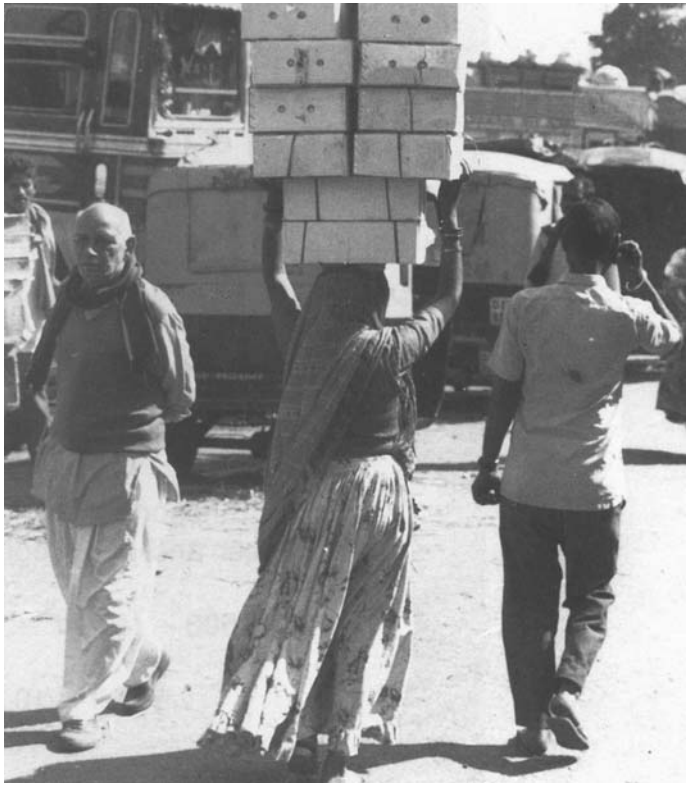
$500 ÷ (40 m^3 ÷ 0.2 m^3) = $2.50 per container
and
$2.50 ÷ **8 kg** = $0.3125 per kilogram

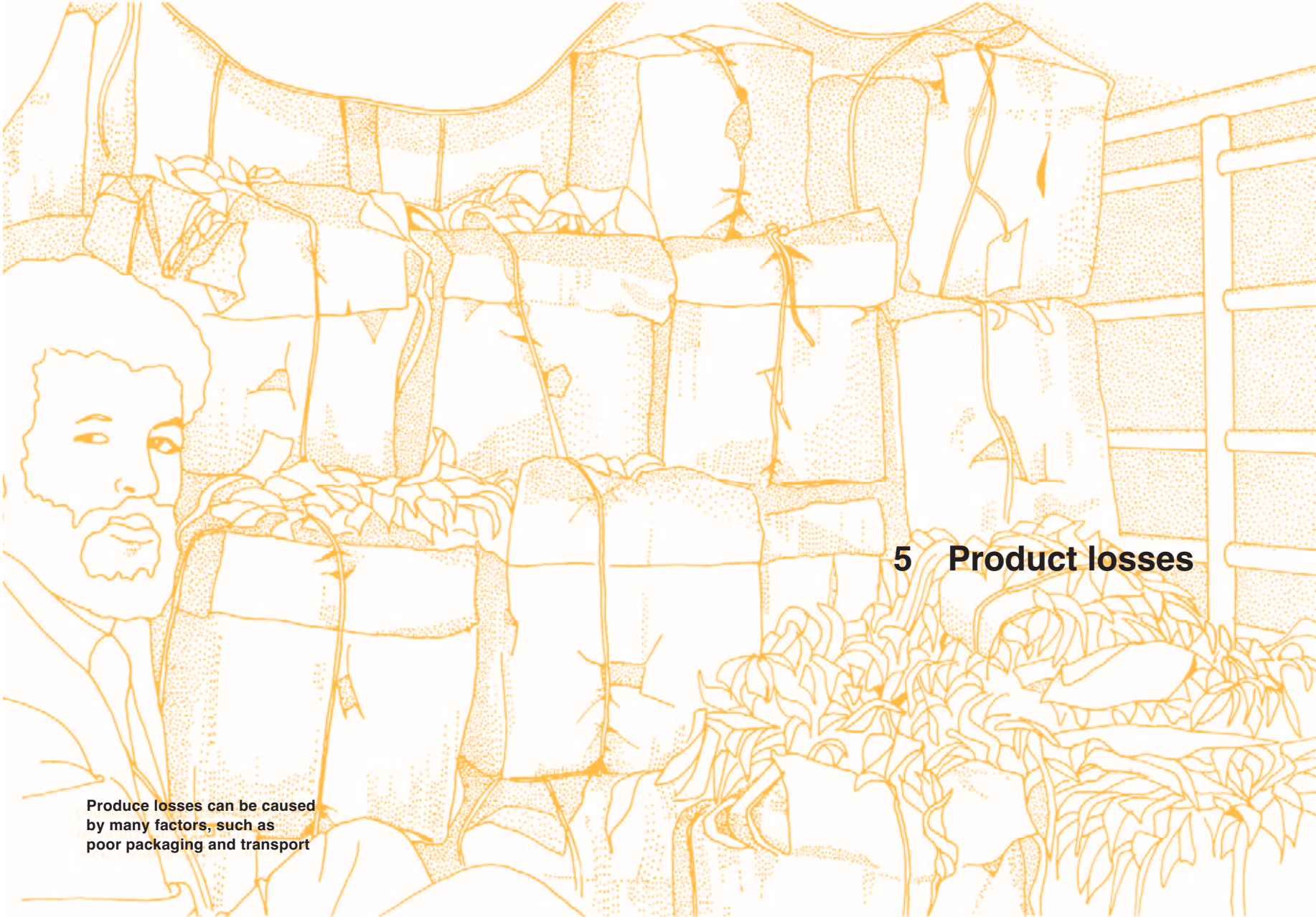
While the transport cost for **green peppers**
per container and per kilogram is ...

$500 ÷ (40 m^3 ÷ 0.4 m^3) = $5.00 per container
and
$5.00 ÷ **10 kg** = $0.50 per kilogram

As can be seen, there are numerous individual costs which can combine to make produce transport extremely expensive. In many cases transport will be the most important marketing cost. It is therefore vital that the cost is calculated correctly. Expensive mistakes can be made if, for example, a village cooperative decides to buy a truck to compete with traders. If it underestimates the costs of operating the truck or over-estimates the amount of produce it will handle it could end up with a large loss.

This is the simplest form of transport – it also costs money





5 Product losses

Produce losses can be caused by many factors, such as poor packaging and transport

If a trader buys one kilogram of produce from a farmer, how much of that one kilogram will he or she actually end up selling? And what will be the average price of what he or she sells? Post-harvest losses of produce, particularly fresh produce, can be quite considerable, both in terms of quantity and quality (which will affect the selling price).

The causes of losses are many and varied and will not be considered in detail here.[2] One of the biggest causes is often the fact that the farmer produces more than the traders want to buy or the traders buy more than they can sell to the consumers. When there is a surplus, physical losses will be high and/or farmers and traders will have to sell at a loss.

Poor harvesting techniques and bad handling on the farm (bruising, exposure to the sun) can mean that much damage has been done even before the produce is sold to the trader.

Poor handling by the trader and his employees can make the situation worse. When truckers are paid on a "per piece" basis, farmers and traders try to squeeze as much as possible into the package. This can be a

Produce which has been badly packed and handled loses its value at the market

Produce which has been well packed and handled obtains higher prices at the market

false economy as the loss resulting from the damage caused can exceed the savings in transport costs. Produce can be damaged in transit, by the constant shaking on bumpy roads, by exposure to sun on top of a bus, and by high temperatures inside a truck or other vehicle (if a truck breaks down and has to sit at the side of the road for two or three days the entire consignment could be lost). Delays and bad handling at the wholesale market can make things worse. Sometimes, for example, produce that has been well packed by the farmer or the trader is simply thrown onto a heap on the floor of the wholesaler's premises, causing further bruising and damage.

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

Losses in weight can occur even if produce is not thrown away. Most crops lose weight during transit and storage as the result of moisture loss. This is not necessarily a bad thing. For example, grain can be stored better when dry. But it does mean that a kilogram of produce purchased from a farmer is not equal to a kilogram sold to a consumer by the trader.

Therefore, you should try to estimate the losses. This will not be easy unless you are able to follow consignments all the way through the marketing chain. Also, losses will vary according to the season; poor quality fruits which are unsaleable during a glut may well be saleable when there is a shortage. Most Ministries of Agriculture have assessments of losses and these can be used as a starting point for estimates. However, there is often a tendency to exaggerate losses, so official figures should be treated with caution.

The best way to treat losses is one that enables you to compare the quantity eventually sold with the quantity bought from the farmer. It gives the most accurate calculation and also means that the costs involved in packing, transporting, handling and storing produce which is eventually lost are included. An example of this calculation is shown in Figure 3, together with the more usual, and wrong, method of calculation.

Figure 3
Calculating the cost of product losses

Assume that, at **10 percent** loss levels, **1 kg** of tomatoes purchased by the trader from the farmer results in **900 grams** (0.9 kg.) available for sale to consumers. The trader buys tomatoes from the farmer at **$5 per kilogram** and marketing costs are $2 per kilogram for the tomatoes originally purchased. The selling price of tomatoes is **$8 per kilogram.**

Then the costs are ...

Figure 3, continued

1 kg purchased at **$5 per kg**	**=**	$5.00
1 kg packed and transported at **$2 per kg**	**=**	2.00
Total Costs	=	$7.00
Sales Revenue or **$8** x 0.9 kg	=	7.20
Thus the margin to the trader	=	$0.20

Below is an example of the more usual,
and wrong, method of calculation.

1kg purchased at **$5 per kg**	=	$5.00
1kg packed and transported at **$2 per kg**	=	2.00
10 percent losses or **$5** x 0.1	=	0.50
Total Costs	=	$7,50
Sales Revenue or **$8** x 1 kg	=	8.00
Thus the margin to the trader	=	$0.50

The second calculation is clearly wrong
because here the trader is seen to be obtaining revenue
from produce which has already been “lost”.

Note: We will return to the correct methology in Chapter 9 where a worked example of a marketing cost calculation is given.

Product losses
may occur during transport

Separating undamaged produce
from damaged produce

There are quality as well as quantity losses. Quality losses reveal themselves when the trader has to sell part of a consignment at a lower price than the rest. This could be because some produce is damaged in transit, because produce deteriorates over the period it is being sold or because the trader expects that it will deteriorate before there is another opportunity to sell it. In many countries perishable fruits and vegetables are sold at low prices on Saturday evenings because markets are closed on Sundays. Such produce may be unsaleable on the Monday morning because it has to compete with fresh produce.

In estimating the price the trader receives for produce that was probably purchased from the farmer at a fixed price per kilogram, you must therefore take account of the fact that all of the consignment is unlikely to be sold at one price. Not only will there be price variations due to quality differences but prices will vary according to supply and demand in the market. To calculate the average price the trader receives you must therefore calculate a weighted average price. An example of this calculation is shown in Figure 4.

Figure 4 shows a very different picture of trader revenue than if we had used the price of the first sale, which would probably have been at $2 per kilogram.

Figure 4
Calculating weighted average selling price

Assume an example involving a consignment of **100 kg** of tomatoes as follows ...

50 kg	sold at $2.00	=	$100
20 kg	sold at $1.40	=	28
20 kg	sold at $1.00	=	20
5 kg	sold at $0.40	=	2
(**5 kg**	which cannot be sold)		–
	Total Revenue	=	$150

Then the average selling price per kilogram is ...

$150 ÷ **100 kg** = $1.50