

# AGRIBUSINESS SERIES

E x p o r t   H a n d b o o k s

## HOW TO CALCULATE EXPORT COSTS FOR AGRICULTURAL PRODUCTS



Inter-American Program for the Promotion  
of Trade, Agribusiness and Food Safety



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**Inter-American Institute for Cooperation on Agriculture, IICA**  
Inter-American Program for the Promotion of Trade,  
Agribusiness and Food Safety

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The Inter-American Institute for Cooperation on Agriculture (IICA), through its Agribusiness Competitiveness Directorate, seeks to help countries identify and take advantage of opportunities provided by the market, and to support public and private institutions that encourage competitive development of agribusinesses.

In January 2004, the IICA launched the *Inter-American Program for the Promotion of Trade, Agribusiness and Food Safety*, which has its main office in Miami, Florida. This initiative was undertaken with a mandate to offer greater technical cooperation for strengthening the entrepreneurial ability of small and medium-size agribusinesses in IICA member countries, help identify trade opportunities and provide information that promotes trade by facilitating decision-making.

Thus far, the activities conducted by the program have enabled us to identify certain needs that small and medium-size agribusinesses in the Americas seem to have in common. These needs have been grouped according to “priority issues” and we have published analyses of them in our *Agribusiness Series*, publications aimed at helping strengthen the competitiveness of small and medium-size businesses in the hemisphere. One of the sections, *Exporting Handbooks*, aims in particular to set forth concepts and notions that can facilitate decision-making for those who wish to successfully enter the international market.

This document, *How to Calculate Export Costs for Agricultural Products*, identifies the costs involved in the export process and shows how to calculate those costs, using practical examples. It also includes a list of international commercial terms —Incoterms— and a form for calculating export costs for agricultural products.

The document was prepared by Frank Lam, Agribusiness Specialist of the *Inter-American Program to Promote Trade, Agribusiness and Food Safety*.

We are confident that this publication will become a document of reference for small and medium-size agribusinesses, and at the IICA we hope we can contribute to strengthening your competitiveness and improving your living conditions.

Sincerely,

**Miguel García Winder**  
*Director of Agribusiness Competitiveness  
Inter-American Program to Promote Trade,  
Agribusiness and Food Safety  
IICA Office in Miami*

The objective of this document is to familiarize the reader with certain basic notions related to the export of agricultural products, in particular with the costs and margins that should be taken into consideration by the use of practical examples. We have sought to offer a clear and simple interpretation of costs.

The process of exporting requires more specific knowledge than local or domestic marketing does. Agribusinesses, in general, focus on production costs but tend to disregard the costs exacted by international marketing. It is important to point out that intermediaries and exporters engaged in buying and selling products in domestic and international markets must have in-depth knowledge of the costs that this activity entails.

In recent decades, there has been an emphasis on the relationship between economic development and the promotion of exports, with the idea that the latter can attract investment and at the same time create jobs and wealth. Furthermore, there has recently been a trend towards liberalizing international trade and the signing of bilateral and multilateral free trade agreements. This situation gives exports an increasingly relevant role to play in the development strategy of nations.

In this context, agricultural products perform a highly relevant function; however, to be able to compete internationally, both countries and agribusinesses must clearly define their strategy with respect to costs and also with regard to quality. Given that most countries in the western hemisphere still act as suppliers of raw materials, implementing a cost strategy is of the utmost importance to keep competitive in the market.

Knowledge about and the appropriate management of costs —both production and export— can be the key component for agribusinesses that venture into the “international arena”, especially for small and medium-size companies which have not yet managed to create an economy of scale.

The stages that have to be covered to transfer products from an agribusiness to the consumer constitute what is called the “marketing chain”. In each stage, whether you want to participate in the domestic or international market, it is necessary to carry out a series of actions that entail costs. These costs may be simple, such as the agribusiness opportunity cost<sup>1</sup>, or as complex as the cost of transforming the product in order to lessen its perishability.

Why does an agricultural product sold in a Miami supermarket or a Chicago produce store generally have a price that is much higher than what was paid to the producer? The costs entailed by the export process are not always easy to identify; however, there are many costs, most of which are not well known, for consumers and producers. For instance, it is often thought that intermediaries make large profits from their participation in the marketing chain, but they too incur costs that are intangible or difficult to identify.

In the case of local markets, where the marketing chain tends to be less complex, the difference between the price paid at the farm or packaging plant and the price which the consumer pays is relatively small. It is not only because of physical proximity, but also because there are fewer marketing stages. In contrast, when international markets are involved, the marketing chain involves a greater number of actors and frequently entails higher costs, due to the greater number of steps involved in these operations, such as the payment of duties, licenses, permits, etc.

In the export process, we can identify ‘variable costs’ which, as the name indicates, vary according to volume. Examples of variable costs are packaging and transport costs, which generally tend to be variable in nature. Also there are ‘fixed’ or ‘semi-fixed’ costs, which are static or quasi-static in nature, regardless of quantity; these include the costs of licenses, permits, etc.

In this document, we will examine the main types of costs in the export process and provide examples that illustrate the concepts presented.

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1. Opportunity cost: refers to the benefit or profit, which is not received because a resource, such as time, is allocated to a different activity.

# COSTS OF THE EXPORT PROCESS

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## A. PRODUCT PREPARATION AND PACKAGING COSTS

It is generally thought that the costs of harvest and transport —from the farm to the packaging plant or from the farm to the processing plant— are part of production costs. However, the costs of sorting and cleaning product are considered to be preparation costs. Usually these activities are not carried out in the field, but in the packaging or processing plant. Some countries require certain products to undergo special treatments before being exported, and those treatments increase preparation costs.

The cost of packaging the product is included in the same stage; that is, the cost of putting it into a package that enables its adequate transfer to the final consumer. Depending on the product and destination, this cost may constitute a significant percentage of the final price. Nowadays, the different regulations in effect in international markets have a major influence on this cost.

Product preparation and packaging costs can be easily identified: preparation costs usually relate to the volume or weight of the product; packaging costs relate to number of units.

### a.1. Costs of preparation of the agricultural product

In the export process, one of the main tasks to be carried out after bringing the product from the field is to prepare it for subsequent packaging. This is one of the most important stages since the human intervention is significant and poor preparation of the product can destroy months of work. Among the most frequent activities are:

- **Preparing:** consists of removing roots, leaves or stems that are attached to the product and that may affect its quality.

- **Selection:** separation of the products into marketable and non-marketable based on marketing criterias such as shape, color, texture, etc.
- **Cleaning:** elimination of soil and foreign objects.
- **Sorting:** separation of product according to quality and size in order to add value; in many cases, the product is labeled at this stage; labeling enables it to be differentiated from other similar products.
- **Treatment:** application of a chemical or physical process to enhance the product's quality, durability, or appearance.

## a.2. Packaging costs

Most agricultural products intended for the international market require packaging. Packaging has four main objectives. First, to protect the product, since handling can affect the quality. Second, to facilitate the product's movement in all stages of the marketing chain. Third, packaging enables the product to be divided into retail units. Finally, packaging serves an information and promotional function, for the different agents in the marketing chain as well as for consumers. Lately, the agricultural products market has become more sophisticated, and consumers are increasingly demanding reusable and environmentally friendly packaging.

Packaging costs are relatively easy to identify, since they are directly related to the product. Once we know the capacity of the package— for example, in the case of mangos for export, the boxes have a capacity of 4.2 kilograms, and in the case of bananas for export, the boxes are 18 kilograms — we can determine packaging cost per kilogram.

Packaging costs also include the cost of straps, platforms and clamps. Though these costs are often minimal, they should be taken into account to avoid later surprises.

## How to calculate preparation and packaging costs?

To illustrate this concept, we will use a hypothetical export example. Suppose we have to pack a container of mangos for the U.S. market. Before being packaged, the product must be cleaned, selected, sorted, and treated with hot water, for this market in particular. This process has a cost of \$0.18 per kilogram. Once the process has been carried out, the product is packaged in boxes of 4.2 kilograms capacity, which is equal to:

Weight range of each mango (grams)	No. of units per box
300 – 400	12
400 – 500	10
500 – 550	8

As you can see in the above table, boxes with smaller mangos will have a larger number of units, while boxes with larger mangos will have fewer units; however, the weight of the box remains almost constant.

If the cost of the cardboard box is \$0.30 per unit placed in the packaging plant, and straps, clamps, pallets or platforms and labor account for an additional \$0.20 per box, the cost of preparation and packaging a 40 foot container, with a capacity of approximately 1,400 boxes, would be calculated as follows:

Treatment cost (4.2 Kg. * \$0.18)	\$0.76
Packaging cost	\$0.30
Other costs	\$0.20
<b>Preparation and packaging cost/Box</b>	<b>\$1.26</b>
Cost per container (1,400 boxes)	\$1,746.00

## B. PRODUCT HANDLING COSTS

Product handling constitutes a significant percentage of the marketing chain's cost structure. In particular, agricultural products undergo handling at various points during export, notably at ports, airports, and customs, in both the exporter country and the importer country. In many cases, when cargo consolidation is carried out, handling costs tend to increase.

For example, for the U.S. market, due to the security regulations currently in effect, imported products are subjected to very strict controls, which generate additional handling costs.

Depending on the product's manipulation, handling cost may constitute a significant category; however, identifying the handling cost in the export process can be somewhat difficult because it may require distinguishing it from another cost.

### How to calculate product handling costs?

Continuing the above example, we have the following costs: in the packaging plant, a cost of \$0.23 per box, which represents the movement of the product within the plant; at the port of origin, a stowage cost of \$0.03 per box and a fumigation and inspection cost of \$0.12 per box; and at the port of arrival, a cost of unloading and handling the fruit, \$0.41 per box.

Thus, the handling cost per container in this chain will be as follows:

Handling cost (packaging plant)	\$0.23
Stowage cost (port of origin)	\$0.03
Fumigation cost (port of origin)	\$0.12
Cost of unloading and handling (port of arrival)	\$0.41
<b>Total cost of handling/box</b>	<b>\$0.79</b>
Total cost of handling per container (1,400 boxes)	\$1,106.00

## C. TRANSPORT COSTS

Once packaged, the product must be transported. Depending on the nature and extent of the company's organization, transport may mean transfer of product to another stage in the export process (for example, to a refrigeration room or to an inventory center) where it is stored until the volume is enough for further transport.

In general, transport cost is easy to identify, since the agribusinessman or exporter usually has to pay it by unit of weight or volume (per kilos, quintals, boxes, etc.) or per distance. The cost is often determined per container or per truck. Where the agribusiness owns the means of transport, the calculation of transport costs is more complex.

Transport of product to the final market is a significant cost for exporters. Thus, depending on what was agreed, there may be various means of transport (ground, sea, rail or air).

Most agricultural products travel by land or sea, depending on the location of the exporter country and importer country. But when products which are perishable, delicate or more value, such as flowers, are concerned, it is necessary to resort to air transport.

The most common method of representing transport cost is per unit. In the case of ground transport, it is normally quoted per containers of 20' (1 TEU<sup>2</sup>) or 40' (2 TEU), and the cost depends on distance traveled and type of container, which can be dry, refrigerated or frozen. When ground transport of an agricultural product is paid per container, the container cost is divided by the number of boxes or kilograms that it contains to determine the unit cost.

For sea transport, which is generally slower but cheaper, costs are normally quoted per container, based on weight, quantity or volume. Though there are other ways of sending product by sea, most agricultural products are sent in containers, to facilitate handling.

Air transport is more expensive but faster than the other three shipping methods that are used: planes that transport passengers and cargo,

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2. TEU = Twenty-foot Equivalent Unit.

cargo planes and “charter flights”. The cost depends mainly on weight or volume, destination, and season.

In general, the containers used in air transport are owned by the airlines and are an integral part of the aircraft. They usually are relatively uniform and their capacity varies from 120 to 1,077 cubic feet.

### **How to calculate transport costs**

Continuing the above example, let’s suppose that a container is to be transported from the packaging plant to the port of export and will then go by sea to its final destination.

In this case, the cost of ground transport, from the packaging plant to the port of export is \$266.00 per container (\$0.19/box) and the cost of sea transport is \$1,288.00 per container (\$0.92/box). To calculate the cost per container, we must total the ground cost and sea cost, and multiply the result by the number of boxes per container to determine the cost per container:

Ground cost	\$0.19
Sea cost	\$0.92
Transport cost/box	\$1.11
Cost per container (1,400 boxes)	\$1,544.00

Transport cost is one of the most important factors in the export process. Calculating it before any shipment is essential to the success of the transaction.

### **D. INSURANCE COSTS**

Every international transaction entails some risk, whether commercial (breach of contract, insolvency of the supplier or client, accidents in transport and delivery of product, etc.), type of currency (different

quotation of currencies at the time of contracting and at the time of collection or payment for the transactions), interest rate, political risk, environmental hazards, etc.

To minimize these risks, exporters generally purchase insurance policies, which represent additional costs. Determining the cost of insurance is directly related to the transaction's risk probability. The cost of insurance varies significantly, according to the circumstances in which the deal was made, type of product, market, etc.

### How to calculate insurance costs

Continuing the above example, two types of insurance are considered in this case: an insurance policy of \$0.08 per box which covers the product during ground transport and maritime insurance of \$0.20 per box.

Cost of ground insurance	\$0.08
Cost of maritime insurance	\$0.20
Cost insurance/box	\$0.28
Cost per container (1,400 boxes)	\$392.00

## E. COSTS DUE TO LOSS OF PRODUCT

In the initial stages of the marketing chain, particularly during transport and handling, agricultural products undergo numerous quantitative and qualitative losses. Quantitative losses refer to loss of weight or volume. Therefore, in the packaging plant, companies generally add more products per box to counteract the decrease in weight resulting from manipulation and transport (for example, with tropical fruits). In the case of perishable agricultural products, losses in quantity are often substantial and may depend on the type of packaging that was used.

Qualitative losses, on the other hand, refer to the deterioration of the organoleptic qualities that a product may have when it reaches the

final consumer. A product's deterioration in quality is manifested in its appearance, texture, aroma and taste.

The costs generated by these types of losses are difficult to specify because a number of factors which are difficult to anticipate come into play. Frequently the deterioration originates in the farm or agricultural operation itself, as improper harvesting techniques or defective handling of product will lead to irreversible damage to quality. To illustrate this concept, consider the case of the banana. Bananas harvested from plants infected with *Mycosphaerella fijiensis* (Black Sigatoka)<sup>3</sup> ripen prematurely, i.e., before arriving in the ripening room. This causes a substantial loss of quality, and it is not uncommon that sometimes an entire container can be a lost.

The situation can worsen if the product is handled improperly during transport, preparation or packaging. For example, when a product is being transported to the packaging plant, sometimes it is exposed to temperature changes, solar radiation, heavy rain, subjected to long storage periods, or careless handling that can cause physical damage.

To counteract the decrease in weight due to loss of humidity, exporters generally increase the box's final weight by 1 to 5%. This is an additional cost for the exporter, but it is something that has to be dealt with. The problem of product loss due to deterioration of quality can be, partly resolved by more careful handling in the different stages of the chain.

In any case, it is clear that in all stages of the marketing chain there will always be some product loss, mainly due to improper handling. Exporters will have to discard damaged products from those that are intact. Therefore, it is essential to estimate the costs that result from product loss. The best way to calculate these costs is by comparing the quantity packaged with the quantity received by the importer.

## **How to calculate costs due to product loss**

Continuing the above example, suppose we send a container with 1,400 boxes of mango. In this case, a weight loss of 5% is expected. If this

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3. A fungus which attacks banana plants

weight loss is not taken into account, the importer will apply a penalty to compensate for receiving less product than contracted.

Exporters usually anticipate a decrease and commonly increase the weight during packaging, so that the product arrives with the correct weight. Sometimes exporters fail to take product loss into consideration and incur a penalty imposed by the importer which they must pay. The table below explains the calculation of costs due to product loss:

	Product with no loss	Product with 5% loss (a)	Product with 5% loss (b)
Cost of the product	4.0 kg* \$0.35 / kg = \$1.40	4.2 kg * \$0.35 / kg = \$1.47	4.0 kg* \$0.35 / kg = \$1.40
Cost of handling, packaging, transport, etc.	\$ 2.77	\$ 2.91	\$ 2.77
Total cost	\$ 4.17	\$4.38	\$ 4.17
Price of the product (4 kg box)	\$6.00	\$6.00	\$6.00 * 95% = \$ 5.70
Margin	\$1.83	\$1.62	\$1.53
Cost due to product loss		\$0.21 per box	\$0.30 per box

- (a):** The exporter anticipates the loss and increases the weight in the packaging plant
- (b):** The exporter fails to anticipate the loss and does not increase the weight in the packaging plant

In the second column, hypothetically the product does not have any loss and generates a margin of \$1.83. In the third column, the exporter anticipates the decrease, incurring an additional cost of \$0.21 per box on account having increased the weight of the product. In the fourth column, the exporter fails to anticipate the loss and is penalized by the importer. In

this case, the price per box is \$5.70, and the marketing margin is reduced by \$0.30 per box, compared to the first and second columns.

A 5% decrease in product weight from the packaging plant to the importer's warehouse, has a cost of \$0.21 per box.

In contrast, in the the case where the exporter fails to consider the product loss from the packaging plant to the importer's warehouses, the cost is \$0.30 per box. Product weight loss should be minimized and not ignored. The compensating for product weight loss has a cost but this cost is such less than the penalty cost imposed by the importer.

In both cases the losses are significant, and in these types of transactions, where marketing margins are very low, an increase in costs can be disastrous for a company.

Losses due to quality can have harsher consequences than losses due to quantity or weight. The former occur when an exporter sells part of his product under the consignment system and receives a lower price than expected. This happens when the product has been damaged during handling and transport, or when it is inspected upon arrival at the port of destination and found not to meet the expected standards of quality.

Situations like these occur in the export of agricultural products. Exporters often have to sell a percentage of their products at a lower price due to loss of quality.

## F. STORAGE COSTS

Due to its seasonality, many agricultural products are harvested only at certain times of the year. These may be stored in order to be sold later. Storage is one of the most important costs for many agricultural products, and its main objective is to extend the shelf and a lengthier presence in the market. The working assumption is that having greater product availability in the market during months when the product would not be otherwise available will compensate storage costs.

Storage costs generally depend on two factors: the cost of the product which will be stored and the type of warehouse. Warehouse costs depend in large measure on their management, the type of service required and the duration of the storage. If the warehouse is at full capacity throughout the year, the costs will be relatively lower than if it is used only certain months. Storage can be done by the exporter or the importer.

Most agricultural products are perishable by nature and cannot be stored for a long time. There are some fruits, roots, and tubers which can be stored for a long period and made available to customers throughout the year.

Storage costs can be categorized as follows:

- Administrative costs: costs of maintaining the product during certain periods of time; they are related mainly to the cost of physical installation (depreciation, maintenance, rental, management, etc.).
- Treatment costs: related to those treatments which have to be made to prepare the product for storage to maintain its quality.
- Costs due to product loss: decreases in the quality and quantity of product also occur during storage.
- Capital costs: as in any business activity, the cost of money should be incorporated into total costs.

### **How to calculate storage costs**

To illustrate this concept, we use ginger as an example because storage of mangos is rare. Monthly rental of the warehouse is \$1,500.00 and it has a 2,500 box capacity. However, despite the fact that its conditions are adequate, a monthly 3% decrease in product weight is expected. The expected selling price is \$7.80 per box.

Number of boxes	2,500.00
Weight (box) in kilograms	13.00
Warehouse rental (per month)	\$1,500.00
Decrease in weight (per month)	3%
Calculations	
Total weight:	$2,500 \text{ cajas} * 13 \text{ kg} = 32,500 \text{ kg.}$
Decrease in weight:	$32,500 \text{ kg} * 3\% = 975 \text{ kg} / 13 \text{ kg} = 75 \text{ boxes}$
Rental cost:	\$1,500.00
Cost of decrease in weight:	$75 \text{ boxes} * \$7.80 / \text{box} = \$585.00$
Total monthly storage cost:	\$2,085.00

For the above example, the storage cost for one month is \$2,085.00, obtained by adding the warehouse rental cost and product loss during storage.

## G. TRANSFORMATION COSTS

Transformation of product is often a significant factor in marketing costs. Some products such as coffee have to be transformed in order to be suitable for consumption. The price of a kilo of "cherry beans" is not the same as that of a kilo of "green coffee". Transformation costs vary according to the technological ability and size of the company responsible for providing the service.

To calculate transformation costs, the first step is to identify the conversion rate, i.e., how much raw material will be converted into final product. It is important to know the number and quantity of by-products which are created in the transformation process, and their value.

### How to calculate transformation costs

Returning to the example of mangos for export, one of the most common processes used for mango that does not comply with international standards is to transform it into pulp. Pulp is usually used to prepare juice or drinks for local consumption.

In the mango case, a conversion rate of 60% is estimated; that is, for every 100 kilograms of mango, 60 kilograms of pulp and 40 kilograms of peel and seed will be obtained. The peel and pulp have not economic value. The cost of processing 100 kilograms of mango is \$16.00 and the cost of packaging it is \$28.00.

The price of second-grade quality mango, i.e., that which is not classified for the international market, is \$0.15 per kilogram.

The preparation cost per kilogram of pulp will be:

Cost of the mango for processing	100 kg * \$0.15 / kg. = \$15.00
Cost of processing	\$16.00
Cost of packaging	\$28.00
Output	60%
Cost of pulp/kg of pulp	\$15.00 * 100 kg * 0.6 kg = \$0.25
Cost of processing/kg of pulp	\$16.00 * 100 kg * 0.6 kg = \$0.27
Cost of packaging/kg of pulp	\$28.00 * 100 kg * 0.6 kg = \$0.47
Total cost /kg of pulp	\$0.99

In this case, as shown in the above table, the cost of producing one kilo of mango pulp is \$0.99.

## H. COSTS OF CAPITAL

Capital costs, which are often not taken into account, constitute a significant cost in the export process. Most exporters, in order to finance their exports need cash. A short credit flow will enable the exporters to bear the export costs. In most cases, local banks or lenders are sources of cash and credit loans. Loans have an interest which must be added to the costs of the export process.

An exporter may use his own capital, though this has an opportunity cost. By using his capital, an exporter would not receive the corresponding income since the funds have been allocated to finance the export costs process.

The cost of capital generally varies from one country to another, depending mainly on bank's interest. The cost of capital can be itemized as follows:

- **Cost of working capital.** Usually, any exporter will need his own or external financing to cover production costs or the costs of buying product and its subsequent costs in the export process. It is quite possible for many small and medium-size exporters to buy product, export it and, with the money obtained, buy more product; therefore, their financing needs are limited, especially when those businesses have limited cash availability. Exporters who buy products or sell them on credit will need a larger amount of working capital. In some cases, exporters will buy a harvest in advance; that is, they partially or totally finance the producers and, therefore, they have to finance the production throughout its duration. This makes the cost of capital even higher.
- **Cost of investment capital.** In some cases, to set up an export operation, it is necessary to acquire assets. The exporter has two options: leasing (buildings, cold rooms, machinery, vehicles, etc.) or buy the assets. The latter requires more money up front and, therefore entails a capital cost.

If the working and investment capital are financed by the exporter, the capital costs are not tax deductible. The opposite applies if the exporter resorts to external financing sources, such as a commercial bank which charges an interest on the loan. Because of the tax burden, exporters prefer external financing in order to leverage operations and create a tax shelter which decreases the taxes they must pay.

## **How to calculate capital costs**

In most international transactions, the billing and collection processes are not simultaneous. Usually, exporters have to issue credit and they receive payment in 30, 60 or 90 days term.

An exporter should consider the capital cost in terms of time. Let's suppose a company needs \$6,000.00 to prepare a container of mango.

The exporter borrows \$6,000.00 at 60 days term. The APR (Annual Percentage Rate) is 9.75%. The capital cost for that shipment would be:

$$\$6,000.00 * 9.75\% * (60 \text{ days}/360 \text{ days}) = \$98.00$$

The exporter would have a capital cost of \$98.00 for each container exported. To calculate the capital cost per box of mango, divide \$98.00 by 1,400 boxes, and the result is \$0.07 per box.

## I. FINANCIAL MANAGEMENT COSTS

In general, the export process involves numerous steps of a financial nature that can generate additional and unexpected costs if they are not managed properly. These steps are related to the payment method negotiated by the exporter and they generally include:

- **Payment in advance.** This is the safest method, but the one least utilized by exporters. It has a great advantage for the exporter, because no risk is incurred after the product has been sent.
- **Letter of credit.** This is a very secure method and it consists of a bank, acting at the importer's request, committing to make payment to the exporter.
- **Bank collection.** This payment type is riskier for the exporter than the letter of credit. Bank collection enables the exporter to collect payment for the sale of his products through a bank.
- **Credit or open account.** This type of transaction consists of the exporter issuing a credit to the importer according to terms previously agreed by both parties. With this procedure, we recommend the exporter to obtain insurance, because it is the riskiest method.

In addition, exporters may bear additional costs related to currency exchange systems. Also, there may be commissions or fees for bringing the currency into the country of origin.

## How to calculate financial management costs

Continuing with the example, the financial management cost, i.e., the cost of collecting the sales invoice totals \$42.00. In this case, the financial management cost per box is \$0.03 per box which is obtained by dividing \$42.00 by 1,400 boxes.

## J. PROMOTION AND ADVERTISING COSTS

Though agricultural products usually do not depend on a specific promotion and advertising strategy, the trend is to make clear efforts to differentiate products by country of origin, variety, or production methods. This generates costs related to promotion and advertising activities, such as participation in fairs, advertisements in different media, etc. In general, these costs are not directly related to the product itself.

## K. IMPORT AND EXPORT TAXES

Despite the fact that many customs barriers have disappeared with the liberalization of international trade, import taxes still exist in many countries. These taxes constitute an additional cost in the export process and can be calculated in various ways:

**Ad valorem tax:** These are taxes which are applied to merchandise and which are set as a percentage of the customs value.

**Specific merchandise taxes:** These are taxes applied to merchandise at a fixed amount of money for each unit of measurement established beforehand, which may be a kilogram, liter, dozen, meter, etc.

**Customs surcharge:** These are customs taxes that apply to certain merchandise and whose essential purpose is to protect domestic industry when that industry has made claims of 'dumping' by other countries; they are also known as compensatory or 'anti-dumping' fees. Generally it is a percentage applied to the customs value for a specified period.

**Export taxes:** These are taxes which an exporter must pay to the government whenever an export is carried out. Export taxes provide additional income for the government which is often used to finance development programs, research, etc., to strengthen the competitive position of the sector to which they are applied.

## L. COSTS OF FEES, LICENSES AND COMMISSIONS

The costs mentioned above are considered the most important ones in the export process. However, exporters also have to deal with other costs, such as export fees and licenses. These costs generally vary from country to country, but in most cases they can be a significant to a export product's cost structure.

Commissions, such as fees and licenses, constitute additional costs in the export process. Though they are difficult to predict, in many cases they cause substantial increases in export costs.

## M. INTERMEDIATION OR MARK-UP

Once all costs entailed in the export process have been accounted for, we have to add what is known as the intermediation or marketing margin. The marketing margin is represented by a percentage. In most cases, this percentage refers to repayment of the risk and costs that have been incurred; clearly, if those costs are not known, it will be difficult to know if they are being fully compensated and if the margin is reasonable or not.

The intermediation or marketing margin is a percentage of the final weighted-average selling price which is determined at each stage in the export chain, such as that in which the different prices are set for the importer. For example, an exporter can sell his product EXW (Ex Works), which means that the costs and liability will be for his account up to the packaging or processing plant.

If the exporter decides to sell his product FAS (Free Alongside Ship), he will cover transport costs up to the port of export, cargo insurance and handling

costs. For incurring additional costs and responsibilities, the exporter will want to have an intermediation or marketing margin in this new stage.

In the event that the exporter agreed to sell his product FOB (Free On Board), he will have to add the fees and commissions which must be paid for putting the cargo in the means of transport that will bring it to the port of destination. Just as in the previous stage, it is recommended that the exporter, for assuming this risk includes a marketing margin.

If the selling price is CFR (Cost and Freight: port of destination), the exporter should consider the costs of transport (freight) and also the handling costs to be incurred in moving the product in the port of destination, plus the corresponding margin.

Price CIF (Cost, Insurance and Freight) means the exporter will be responsible for paying the insurance cost, and any additional cost that the transaction includes and, of course, an intermediation margin for entering into this additional stage.

Margins are often utilized to analyze the effectiveness of marketing systems, but, though they may be well calculated, they are often difficult to understand. Expressing that part of the price for which the exporter is responsible in any of the stages as a percentage can give the consumer an erroneous impression. Nevertheless, it is necessary to consider the costs that were incurred, as well as the responsibilities and risks that were assumed.

The exporter has various methods at his disposal for selling his product, each with its respective responsibilities and risks. For further insight into the issue, we recommend referring to Annex 1, where the principal international commercial terms ("Incoterms") are listed.

## HOW TO CALCULATE THE TOTAL COST OF THE EXPORT PROCESS AND THE INTERMEDIATION OR MARKETING MARGINS

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Once the costs have been accounted for, they must be added up to calculate the total cost of the export process. Export costs will vary according to type of product, destination market, and most of all, the price agreed on by the exporter and importer.

Establishing the price involves two major risks: a very low price, where the importer obtains most of the benefit, or too high a price, where no buyer will be interested in purchasing the product.

In the case of export of agricultural or agro-industrial products, the importer, wholesaler, or retailer almost always establishes the price, because the products offered are usually available from multiple domestic or foreign producers. In this case, the price does not become a marketing tool, and exporters must look for alternative strategies such as guaranteeing the sale of a minimum volume of product or providing a reliable delivery.

To continue with the example of exporting mangos to the U.S., suppose we export one container of mangos weekly. Once the cost of the product has been determined (what it cost to produce it or buy it), the above-indicated costs are incorporated into it and then the export costs (table below), which will depend on the type of transaction agreed on by the exporter:

	Cost / Box
Cost of the product	\$1.47
+ Cost de preparation of the product	\$0.76
+ Handling cost	\$0.23
+ Cost of packaging	\$0.50
+ Cost of product loss <sup>4</sup>	\$0.21
+ Cost of capital <sup>5</sup>	\$0.07
+ Cost of financial management <sup>6</sup>	\$0.03
+ Cost of exportation and importation	n/a
Subtotal	\$3.27
+ Marketing margin	\$0.48
<b>Precio EXW</b>	<b>\$3.75</b>

	Cost / Box
+ Cost of ground transport	\$0.19
+ Cost of insurance	\$0.08
Subtotal	\$3.54
+ Marketing margin	\$0.53
<b>Price FAS</b>	<b>\$4.07</b>

	Cost / Box
+ Cost of terminal fees and commissions	\$0.12
+ Handling cost	\$0.03
Subtotal	\$3.69
+ Marketing margin	\$0.55
<b>Price FAS</b>	<b>\$4.24</b>

	Cost / Box
+ Cost of air/sea transport	\$0.92
Subtotal	\$4.61
+ Marketing margin	\$0.69
<b>Price CFR</b>	<b>\$5.30</b>

	Cost / Box
+ Additional costs	\$0.41
+ Cost of insurance	\$0.20
Subtotal	\$5.22
+ Marketing margin	\$0.78
<b>Price CIF</b>	<b>\$6.00</b>

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4. The exporter incorporates the loss into the packaging process.
  5. This is the cost of working capital that was used to finance the purchase of the product and the export costs.
  6. This refers to the costs of collecting the invoice.

To calculate the prices shown above, we used a marketing margin of 15% above costs; even though that rate remains fixed during the stages of the chain, the nominal amount increases as the risks and responsibilities in the process assumed by the exporter increase.

Before starting to negotiate with the importer, the exporter should determine in what stage of the chain he is going to sell his product and what his costs will be. With that information, he will be able to negotiate the selling price.

Likewise, if we analyze the cost structure of a box of mangos (CIF), we can see that the gross income received by the producer constitutes approximately 25% of the total cost of the box (\$1.47/\$6.00), and that percentage decreases to the extent value is added to the product.

Continuing with the example, if the consumer price is approximately \$1.29<sup>7</sup> per mango, a box of 8 units will generate revenue of \$10.32. Thus, we see that at this point of the marketing chain, the share of the producer decreases to 14%.

To determine if the marketing margins applied in the estimation of the selling prices will enable us to have a competitive product, we recommend making a "destination to origin" analysis, in the following manner:

- a.** Establish the price of the product in the destination market according to the prices of similar or substitute products.
- b.** Determine the export costs of the product.
- c.** Subtract the export costs from the price of the product in the destination market.
- d.** Verify whether you can compete in the chosen market with the resulting price.
- e.** If the answer is no, review the costs and adjust them to meet the market price.

In conclusion, if exporter can not differentiate their product by brand, quality, variety, etc., the competitive strategy which will give them the

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7. Price per mango in the Publix supermarket chain, Miami, Florida (March 2006)

Undoubtedly, the limited repayment margins generated by trade in agricultural products are often offset by the volume of product. This will continue to be a factor pressuring agricultural companies to design costs strategies that will enable them to be more competitive in the international market.

Understanding the costs involved in the production and export process are indispensable tools for every exporter. Properly managed costs can be reduced and the saving considered as income. The mere fact of being able to identify the most relevant costs of a process can enable an exporter to seek better technological options or seek ways to decrease those costs.

## ANNEX 1: INCOTERMS: RISKS AND COSTS

Incoterms	Explanation
<b>EXW (Ex Works): Named place</b>	The exporter delivers the product to a specific place (warehouse, packaging plant, etc.), but does not incur export or handling costs.
<b>FCA: Named place</b>	"Free Carrier": The exporter delivers the product ready for exporting to the carrier and the latter is responsible for the cargo.
<b>FAS: Named place</b>	"Free Alongside Ship": The exporter sends the product to the means of transport (ship, train, airplane). The exporter assumes all risks and responsibilities up to that moment.
<b>FOB: Named place</b>	"Free on Board": The exporter places the product in the means of transport (air, sea, rail). The exporter assumes the risks and responsibilities up to that stage.

<b>CFR (Port or place of destination)</b>	"Cost and Freight": The exporter is responsible for delivering the product in the port or place of destination, but is not responsible for the risk of loss of or damage to the product, or for other costs that may be incurred during the delivery process.
<b>CIF (Port or place of destination)</b>	"Cost, Insurance and Freight": The exporter is responsible for delivery of the product in the port or place of destination and assumes the cost of insuring the product.
<b>DES (Port or place of destination)</b>	"Delivered Ex Ship": The exporter fulfills his obligation to place the merchandise on board the ship, but does not assume responsibility for importation and unloading procedures.
<b>DEQ (Port or place of destination)</b>	"Delivered Ex Quay": The exporter puts the product at the importer's disposition on the wharf (unloaded), but does not assume responsibility for importation procedures.
<b>DAF (place of destination)</b>	"Delivered At Frontier": The exporter puts the product at the importer's disposition at the border of the country of destination, having complied with export procedures but not import procedures. It is important to define precisely the place and point of destination.
<b>DDP (place of destination)</b>	"Delivered Duty Paid": The exporter assumes responsibility for carrying out importation procedures and for covering their cost (taxes, fees, customs formalities) but not for unloading the product.

Source: <http://www.iccwbo.org/incoterms>

## ANNEX 2: FORM FOR CALCULATING EXPORT COSTS

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Product: \_\_\_\_\_

Market: \_\_\_\_\_

Packaging unit: \_\_\_\_\_

Transportation: \_\_\_\_\_

Payment: Cash: \_\_\_\_\_ Credit: \_\_\_\_\_ days / months

Price of purchase or production \_\_\_\_\_

■ Cost of preparation and handling \_\_\_\_\_

■ Cost of packaging \_\_\_\_\_

■ Cost of product loss \_\_\_\_\_

■ Cost of capital \_\_\_\_\_

■ Marketing margin \_\_\_\_\_

Cost of product to sell EXW \_\_\_\_\_

■ Cost of ground transport \_\_\_\_\_

■ Cost of insurance \_\_\_\_\_

■ Marketing margin \_\_\_\_\_

Cost of product to sell FAS \_\_\_\_\_

■ Cost of terminal fees and commissions \_\_\_\_\_

■ Handling cost \_\_\_\_\_

■ Marketing margin \_\_\_\_\_

Cost of product to sell FOB \_\_\_\_\_

■ Cost of air/sea transport \_\_\_\_\_

■ Marketing margin \_\_\_\_\_

Cost of product to sell CFR \_\_\_\_\_

■ Insurance cost \_\_\_\_\_

■ Marketing margin \_\_\_\_\_

Cost of product to sell CIF \_\_\_\_\_



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