

## METHODOLOGICAL ANNEX 2

### SOURCES OF INFORMATION FOR THE CALCULATION OF COST AND INCOME STRUCTURES FOR SMALL-SCALE PRODUCERS

#### 1. Production costs

For the great majority of products, the information on production costs used in the study comes from the cost structures calculated by the *Corporación Colombia Internacional (CCI)*. These structures were estimated using information gathered in the principal agricultural regions of the country, applying a case study methodology. The survey was carried out in 2007 for an important set of agricultural activities, and complemented in 2009 for other activities (among them poultry farming). The information on small-scale producers is used, assuming that, to a large degree, these can be considered as the small farmers under study. The only exceptions to this criterion are the cases of plantain, for which information on medium-scale producers was used, as there is no data on the small-scale producers, and chicken and eggs, for which the structures calculated for the traditional poultry sector were used.

In the case of crops, the value per hectare of labor costs (workdays), direct costs, and total costs were taken. Variable cost used in the calculation of the producer surplus corresponds to the difference between the total direct cost and the cost of labor. Subsequently, each of the costs per hectare were divided by the average productivity obtained in terms of tons per hectare, to thus obtain the costs per ton or unit costs. For livestock activities, the cost per unit produced published in the cost structures of the CCI was taken (meat by tons, eggs by number, and milk in liters).

In addition, for permanent crops, which by their nature incur costs for over a year, the average annual costs per hectare and the average annual yield over the whole productive cycle were estimated. However, given that the available information only included the cost from the year of planting or establishing crops until the years in which the crop reached its maximum level of production (which varies according to the crop), it was assumed that the information on costs for the other years of the productive cycle are equal to that of the last year for which information is available.<sup>1</sup>

Table 1 shows the products for which information was taken from the CCI, including regions covered, the criteria used by the CCI for classifying each activity in the range of small producers, and the type of product (short-cycle crop, permanent crop or livestock activity).

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<sup>1</sup> Although this tends to overestimate the average yield of the crop, since there is a tendency for this to fall off at the end of the cycle, it also overestimates the cost per hectare, which should also decrease at the end of the cycle as maintenance and harvesting costs lessen. Thus it is considered that the average cost per ton corrects this problem caused by the lack of information on a complete cycle.

**Table 1.** Coverage of the CCI Information on Production Costs for Small-Scale Producers

<b>Crop / Activity</b>	<b>Type of Activity</b>	<b>Regions Covered</b>	<b>Type</b>
Cotton	Short-cycle crop	Atlantic Coast, Eastern Plains, Tolima Grande	Small producer (up to 10 ha)
Rice - manual	Short-cycle crop	Atlantic Coast	Small producer (up to 5 ha)
Rice - irrigated	Short-cycle crop	Atlantic Coast, Eastern Plains, Santander, Tolima Grande	Small producer (up to 30 ha)
Onions	Short-cycle crop	Cundinamarca - Boyacá, Santander	Small producer (up to 1.5 ha)
Yellow corn - mechanized	Short-cycle crop	Atlantic Coast, Eastern Plains, Tolima Grande, Valle del Cauca	Small producer (up to 10 ha)
Yellow corn - traditional	Short-cycle crop	Atlantic Coast, Santander, Tolima Grande	Small producer (up to 5 ha)
White corn - mechanized	Short-cycle crop	Atlantic Coast, Tolima Grande	Small producer (up to 9 ha)
White corn - traditional	Short-cycle crop	Atlantic Coast, Coffee growing region	Small producer (up to 5 ha)
Potatoes	Short-cycle crop	Antioquia, Cauca-Nariño, Cundinamarca - Boyacá	Small producer (up to 3 ha)
Sorghum	Short-cycle crop	Atlantic Coast, Tolima Grande	Small producer (up to 10 ha)
Soybeans	Short-cycle crop	Eastern Plains, Valle del Cauca	Small producer (up to 25 ha)
Dark tobacco negro	Short-cycle crop	Atlantic Coast	Small producer (up to 5 ha)
Virginia tobacco	Short-cycle crop	Santander	Small producer (up to 5 ha)
Wheat	Short-cycle crop	Cauca-Nariño	Small producer (up to 6 ha)
Cassava (home consumption)	Short-cycle crop	Atlantic Coast, Santander	Small producer (up to 2 ha)
Bananito (Stubby banana)	Permanent crop	Antioquia, Cundinamarca - Boyacá	Small producer (up to 5 ha)
Cocoa	Permanent crop	Antioquia, Cauca-Nariño, Santander	Small producer (up to 5 ha)
Coffee	Permanent crop	Antioquia, Atlantic Coast, Coffee growing region, Valle del Cauca	Small producer (up to 5 ha)
Sugar cane for sugarloaf	Permanent crop	Antioquia, Cauca-Nariño, Cundinamarca - Boyacá, Santander, Tolima Grande	Small producer (up to 20 ha)
Plantain	Permanent crop	Coffee growing region, Santander	Medium sized producer (up to 30 ha)
Beef	Livestock activity	Antioquia, Atlantic Coast, Eastern Plains, Santander	Small producer (up to 50 animals)
Milk	Livestock activity	Antioquia, Atlantic Coast, Cundinamarca - Boyacá, Eastern Plains, Santander, Valle del Cauca	Small producer (up to 40 animals)
Pork	Livestock activity	Antioquia, Cundinamarca - Boyacá, Valle del Cauca	Small producer (up to 100 animals)
Chicken	Livestock activity	Cauca-Nariño, Cundinamarca - Boyacá	Traditional (from 29 to 1000 birds)
Eggs	Livestock activity	Santander, Tolima Grande	Traditional (from 29 to 1000 birds)

Subsequently, the average national costs for each crop or activity were estimated. In the case of crops, each one of the regional costs was weighted by the participation of the region in the total area cultivated in 2005. For beef, pork and poultry, regional costs were weighted by the participation of the region in the livestock inventory of 2005, and for milk, regional costs were weighted according to the participation of the region in national production in 2005.

Once the average national costs are obtained for the year 2007, the values were converted to pesos of 2005 by calculating the growth of the agricultural PPI (Producer Price Index) at the national level between the average for the year 2005 and the average for the year 2007, equivalent to 7.4%, and dividing each one of the unit costs by 1.074. In the same way, in the case of the costs for the year 2009 (specifically for poultry), the growth of the agricultural PPI was calculated at the national level between June 2005 and June 2009, found to be 23.6%, and thus each one of the unit costs was divided by 1.236.

It should be pointed out that in the case of beef, pork and poultry, since the available unit costs are expressed in terms of tons in live weight and production is expressed in terms of tons of carcasses, the live weights were converted, dividing by the respective yield in carcasses: 52% for beef, 79% for chicken and 74% for pork.

Lastly, given that there are no CCI cost structures for barley and beans, information from Maldonado et al. (2007) was used. This gave the average unit cost for the year 2003.<sup>2</sup> The growth of the agricultural PPI at the national level between the average for the year 2003 and that of 2005 was calculated at 12.3%, and the unit costs were thus multiplied by 1.123.

## **2. Domestic Prices**

The prices at which the production obtained is valued are prices paid to the producer, simple averages for the year 2005, for the regions where these were available, or wholesale prices in the cases where the former are not available.

In cases where the source of information gave wholesale prices, the assumption used in Garay et al. (2009) was adopted. This consists of adjusting the reported price, assuming that the price paid to the producer corresponds to 80% of the wholesale price, as an estimate of the discount implied in transport costs to the consumption zone and the intermediary's margin. For livestock activities, it was assumed that this proportion corresponds to 90%, given that, on applying the assumed 80%, most of the prices were lower than the calculated average cost.

Table 2 shows the sources of information used for each product and the regional coverage.

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<sup>2</sup> This information is, in turn, taken from the study carried out by Balcázar, Orozco y Samacá (2003), *Fuentes y Fundamentos de la Competitividad Agrorural en Colombia*, a consultancy report for the World Bank and FAO, Bogotá.

**Table 2. Sources of Information on Domestic Prices of Agricultural Products**

Product	Level of commercialization	Regions Covered	Source
Cotton	Price to producer	National average	CONALGODON
Rice	Price to producer	National average	FEDEARROZ
Peas	Wholesale price (green peas in pod)	Barranquilla, Bogotá, Cali, Medellín	SIPSA
Onions	Wholesale price (white onions)	Barranquilla, Bogotá, Medellín	SIPSA
Beans	Wholesale price (average for <i>radical</i> , <i>nima calima</i> and <i>cargamanto</i> varieties)	Bogotá, Medellín	SIPSA
Broad beans	Wholesale price	Barranquilla, Bogotá, Medellín	SIPSA
Yellow corn	Wholesale price	Barranquilla, Bogotá, Cali, Medellín	SIPSA
White corn	Wholesale price	Barranquilla, Bogotá, Cali, Medellín	SIPSA
Potatoes	Wholesale price (average for <i>parda pastusa</i> and <i>R-12</i> varieties)	Bogotá	SIPSA
Sorghum	Wholesale price	Barranquilla, Bogotá, Cali, Medellín	93% of the price of yellow maize
Soybeans	Price traded on exchange	National average	BNA
Tobacco	Price to producer (implicit price from national accounts)	National average	EAM - DANE
Cassava	Wholesale price	Barranquilla, Bogotá, Cali, Medellín	SIPSA
Cocoa	Price to producer	National average	FEDECACAO
Plantain	Wholesale price (green plantain)	Barranquilla, Bogotá, Cali, Medellín	SIPSA
Beef	Wholesale price (beef in carcass)	Bogotá, Barranquilla	SIPSA
Milk	Price traded on the exchange (whole milk)	National average	BNA
Pork	Wholesale price (pork in carcass)	Bogotá	SIPSA
Chicken	Wholesale price (whole chicken without offal)	Bogotá	SIPSA
Eggs	Consumer price	Barranquilla, Bogotá, Cali, Medellín, Bucaramanga, Pasto, Manizales	DANE

In the cases of barley, wheat, bananas and coffee, given that the average unit cost is higher than the average domestic price calculated with the available sources of information, it was assumed that the price paid to the producer was equal to the unit cost; that is, the profit from the activity was zero (0) in 2005.