

*ECONOMIC AND SHORT-TERM INDICES DIVISION*  
*Wholesale Prices and Price Indices Section*

**INFORMATION NOTE ON THE REVISION**

OF THE INPUT AND OUTPUT PRICE INDICES  
IN AGRICULTURE – LIVESTOCK (AGRICULTURAL PRICE INDICES-API)

**Base year 2015 = 100.0**

*Piraeus, June 2018*

## **Revision of the Input and Output Price Indices in Agriculture - Livestock**

(2015=100.0)

### General notes – History

The Agricultural Price Indices (API) or Input and Output Price Indices in Agriculture - Livestock measure the relative change of prices received by the producers in the agricultural – livestock sector from the sale of their products (Output Price Index) as well as the change in the prices paid by them for the purchase of the means they use in the production process (Input Price Index).

The compilation of the Input and Output Price Indices by Hellenic Statistical Authority (ELSTAT) started in 1967 with base year 1966=100.0. Ever since, the indices were revised using as base periods the years: 1976, 1980, 1985, 1990, 1995, 2000, 2005, 2010 and the last one with base year (b.y), the year 2015=100.0.

Based on voluntary agreements between EUROSTAT and the Member States, API indices (Agricultural Price Indices) are revised every five (5) years in years ending in 0 or 5, for reasons of comparability.

### Purpose of the indices

The API indices cover the transactions of products and services in the sections of agriculture and livestock. In addition, are covered the olive oil and must - wine transactions which are included in the manufacturing sector when their production - manufacturing process takes place at the level of agricultural unit and thus it is considered to be activity of the agricultural sector.

The held transactions between the agricultural and livestock units (producers) and the commercial and industrial enterprises refer to the sales of the produced products, as well as to the purchase of means, goods and services, necessary for the production procedure. Both for output and input price indices the selection of the products (and varieties) for which data are collected, is done according to their influence in farmer's income and the total expenses of the base year 2015 respectively.

### Compiled indices

The Agricultural Price Indices are distinguished in the following two main categories:

- a) The Output Price Index in agriculture-livestock, which is divided in the Crop Output Index and the Animal Output Index.

- b) The Input Price Indices in agriculture-livestock. This category includes the following indices:
- The Overall Input Price Index in agriculture-livestock, which is compiled from the aggregation of the price indices of the groups of the means for intermediate consumption and of the fixed capital formation goods.
    - The intermediate consumption goods index in agriculture-livestock
    - The fixed capital formation goods and services index in agriculture-livestock

#### Differences with the previous revision of the price indices (2010=100.0)

In relation with the previous products of Agricultural Price Indices with base year 2010=100.0, the new product: Broccoli has been added in output, in vegetables group.

#### Weighting coefficients

##### a. Outputs

For the calculation of the weighting coefficients of the output price index, the contribution of the production value of the products in the year 2015 was used, according to the total production value in 2015 from Economic Agricultural Accounts (EAA).

The intra-unit consumption of produced products was deducted from the overall annual production, while the transactions of the products between farmers were included according to the autonomous agricultural unit methodology.

In this way, there is a convergence of methodological concepts of agricultural price indices (API) and economic accounts in agriculture-livestock sector (EAA).

##### b. Inputs

The weighting coefficients of the input price indices have been calculated as the contribution of the products to the total of expenditures in the year 2015 from Economic Agricultural Accounts (EAA), separately for the group of intermediate consumption goods and for the group of fixed capital formation goods.

#### Base period

For the comparison of current monthly prices with the price base period and the calculation of relative prices (by source of price collection for every product), the base price in the year 2015 is used. Base prices of the products were calculated by dividing the December 2017 prices or

the last available (due to seasonality) monthly price of the product in the year 2017, with the adjusted price indices of December 2017 or the corresponding last available month of 2017 in the base year 2015. These adjusted price indices were calculated with weights 2015=100 and base prices in 2010 and then divided by the average annual indices of the year 2015.

In the case of products for which production covers two consecutive calendar years, as a base price was used the price of one calendar year. This was done according to Eurostat's methodology, so that these data would be comparable to other price indices.

### Collected prices

#### a. Outputs

The collected prices are the market prices of the products. The market price is defined as the price received by the producer without the inclusion of subsidies on product or production and without the deduction of taxes or levies (except deductible VAT).

#### b. Inputs

The collected prices, referring to the prices paid by the producers, to buy the products and the services they need, for their agricultural and livestock production, do not include VAT and transport expenses and refer to:

- i. The transactions paid in cash at the shops they buy the consumable means they need for the production
- ii. The transactions paid in cash at the shops where they purchase the farm machinery they need, without including VAT and transport expenses, for gross fixed capital formation.

### Sources of data collection

The sources of data collection are the agricultural cooperatives (unions), which collect the final products, as well as the commercial and the industrial enterprises, which buy the final products directly from their producers. Moreover, prices are collected from various organizations that collect products from the producers (e.g. Aeghion's Agricultural Cooperative Union, Currant's Central Cooperative Union etc), or from organizations that collect selling prices of products (Hellenic Cotton Board and Hellenic Tobacco Board in OPEKEPE, etc).

The price data for output price index are collected from 745 sources, while for input price index from 665 sources.

For the compilation of the Price Index for "Insurance Expenses" and "Farm Buildings" (non-residential), index changes of insurances, of the cost of the materials and of the labor remuneration is used. These data are drawn from the Consumer Price Index (CPI), "Material

Costs Index in Construction of New Residential Buildings” and the “Labor Cost Index of New Residential Buildings index”.

### Seasonality

Seasonality influences the agricultural and livestock production, having as a result, some products not to be available in the market every month of a calendar year. Therefore the annual weighting coefficients are divided only in those months in which the products are available in the market.

### Calculation of the API

The monthly Input and Output Agricultural Price Indices are compiled from the individual price indices of the products and of their corresponding monthly weighting coefficients.

The Overall index of each price category (input and output) is calculated for every period  $t$  as the weighted average of the individual indices of the products  $i$  on the current period  $t$  according to the following Laspeyres type index:

$$I^t = \sum_{i=1}^n R_i^t * w_i,$$

Where:

$I^t$  is the total or overall input or output of the current period (month)  $t$ ,

$R_i^t$  is the individual index of the product  $i$  during the current period  $t$  (base 100.0 at base year 0 )

$w_i$  is the weighting coefficient of product  $i$  (which is the result of the value of production or expenditure of the product  $i$  during the base year 0), with:

$$w_i = \frac{p_i^0 q_i^0}{\sum_{i=1}^n p_i^0 q_i^0}, \quad \sum_{i=1}^n w_i = 1,$$

Where:

$p_i^0$  and  $q_i^0$  are, respectively, the price and quantity of product  $i$  during the base period 0,

$i = 1, 2, \dots, n$  different kinds

$t$  = current monthly or annual period.

## Agricultural Price Indices

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In the input indices (intermediate consumption, gross fixed capital formation), the calculated individual monthly index  $R_i^t$ , for the product  $i$ , for the current monthly period  $t$  for the whole country, is the simple arithmetic mean of the relevant prices of all Prefectures (NUTS II level), where prices collected at current period  $t$ . In the output indices (crop output, animal output), the calculated individual monthly index  $R_i^t$ , for the product  $i$ , for the current monthly period  $t$  for the whole country, is the weighted average of the relevant prices of all Prefectures (NUTS II Level), where prices collected for the period  $t$ , with weights, as the sharing of production in every Prefecture level of product  $i$  at the base year 2015.

The annual average individual input indices are calculated as simple arithmetic means of monthly indices, while, the annual average individual output indices are calculated as weighted averages of monthly indices with weights that derive from the variable basket of production (which includes products available in the market on a monthly basis depending on their production).

Data entry of the prices, editing and calculation of the indices, is done, using the Integrated Information System (IIS).

### Announcement of the revised Agricultural Price Indices

The revised API indices will be released on 13<sup>th</sup> of June 2018, with April 2018 as first reference month. The API indices are released monthly, 45 days after the end of the reference month, in a Press Release of standardized form.

### Back casting of time series

Backdated calculations for the monthly and annual Input and Output Agricultural Price Indices, before 2015, were calculated by dividing the product and groups price indices by the corresponding price index of 2015 (in the base year 2010=100.0), so that the changes (monthly and annual) of the time series remain the same.

For the monthly and annual price indices in the period 2015-2017, the monthly price indices were initially calculated with weights of 2015=100 and base prices in 2010 and then these indices were divided by the average annual indices of the year 2015 (to be 100.0 in base year 2015). The annual output and input group indices were calculated on the basis of individual product price indices and new weights of 2015=100.

In the following tables 1,2 the weighting coefficients of the 2010 and 2015 revisions are presented, in the groups and subgroups which consist the inputs and outputs, as well as, the annual average of input and output price indices for the period 2015-2017 and the 1<sup>st</sup> quarter 2018, with base year 2015=100.0.

Agricultural Price Indices

Table 1. Weighting Coefficients in 2015=100 Revision comparing with 2010=100 Revision								
Annual average output price indices in Agriculture-Livestock for 2016, 2017 and								
Monthly Price Indices in 2018, with base year 2015=100.0								
Code	Description	Annual Weighting Coefficients		2016	2017	2018-01	2018-02	2018-03
		2010	2015					
140000	AGRICULTURAL GOODS OUTPUT	100,000	100,000	98.06	99.71	99.19	99.69	101.52
100000	CROP OUTPUT	70,812	71,720	98.10	100.56	100.80	102.72	105.75
10000	Cereals (including seeds)	9,708	8,270	94.73	93.67	96.11	98.12	98.41
20000	Industrial crops	5,227	5,602	112.68	116.56	120.96	130.97	130.99
30000	Forage plants	3,963	4,839	94.17	78.98	80.93	81.37	81.87
40000	Vegetables and horticultural Products	20,594	16,410	97.50	98.35	91.58	92.73	102.13
50000	Potatoes (including seeds)	3,442	2,129	98.43	93.64	80.33	81.41	84.06
60000	Fruits	19,047	22,692	95.34	97.69	103.60	110.26	116.30
70000	Wine (incl. must)	415	295	100.74	98.53	98.35	98.35	98.35
80000	Olive oil	8,280	11,330	101.33	117.06	112.53	112.05	107.75
90000	Other crop products	137	153	95.27	105.72	0.00	0.00	0.00
130000	ANIMAL OUTPUT	29,188	28,280	97.95	97.58	97.43	96.54	96.24
110000	Animals	14,677	12,883	97.73	98.19	98.40	96.73	95.92
120000	Animal products	14,511	15,397	98.12	97.06	96.98	96.43	96.44

Table 2. Weighting Coefficients in 2015=100 Revision comparing with 2010=100 Revision								
Annual average input price indices in Agriculture-Livestock for 2016, 2017 and								
Monthly Price Indices in 2018, with base year 2015=100.0								
Code	Description	Annual Weighting Coefficients		2016	2017	2018-01	2018-02	2018-03
		2010	2015					
220000	INPUT TOTAL	100,000	100,000	98.12	100.57	101.92	101.58	101.44
200000	GOODS AND SERVICES CURRENTLY CONSUMED IN AGRICULTURE	72,986	83,208	97.69	100.43	102.01	101.59	101.38
201000	Seeds and planting stock	4,465	4,809	101.82	101.31	101.32	101.36	101.51
202000	Energy and lubricants	22,215	22,319	92.58	105.00	111.28	109.54	108.16
203000	Fertilizers and soil improvers	5,634	5,234	99.64	97.01	97.15	96.81	96.77
204000	Plant protection products and pesticides	3,618	4,590	100.47	100.81	101.06	100.95	100.89
205000	Veterinary expenses	1,488	1,466	100.06	101.28	100.62	101.37	101.33
206000	Animal feedingstuffs	28,083	34,571	98.95	97.56	96.99	97.14	97.52
207000	Maintenance of materials	2,778	3,821	100.52	101.07	102.90	102.93	102.79
208000	Maintenance of buildings	261	319	98.95	99.61	100.03	100.10	100.12
209000	Other goods and services	5,382	6,081	99.84	101.39	101.81	101.81	101.86
210000	GOODS AND SERVICES CONTRIBUTING TO AGRICULTURAL INVESTMENT	27,014	16,792	100.24	101.26	101.51	101.53	101.75
211000	Materials	21,685	14,519	100.58	101.76	102.26	102.27	102.53
211110	Rotovators and other 2 wheel equipment	1,483	1,436	99.14	99.25	99.29	99.33	99.26
211120	Machinery and plant for cultivation	2,155	2,899	101.43	102.46	103.45	103.45	103.38
211130	Machinery and plant for harvesting	2,080	2,372	100.56	101.41	101.90	101.92	101.95
211140	Farm machinery and installations	4,214	3,260	100.45	101.16	101.53	101.54	101.80
211210	Tractors	613	858	99.84	99.34	99.58	99.55	99.81
211290	Other vehicles	11,140	3,695	100.75	103.51	103.97	103.97	104.78
212000	Buildings	5,329	2,273	98.10	98.03	96.71	96.81	96.77