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# ASPECTS CONCERNING THE PRICE OF SOYA BEANS IN THE EUROPEAN UNION (2018-2020)

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***Abstract***

*Soya, is an important plant due to its plurivalence, taking into account aspects related to its use as an industrial raw material, from the point of view of its use in animal feed, as well as the agro-technical-technological aspects it covers. At the level of the European Union, for the period 2018-2020, soya was grown on an area of over 900,000 ha, generated a total production of about 2,800,000 tons and reached an average production level per unit of production (ha) of 2,996 kg (average of the period analysed). Starting from the physiological peculiarities of the plant, it is found that soya was practiced at the level of 15 states in the European Union. The main Community producers are represented by Italy, Romania and France (Italy – 1,078,270 tonnes respectively 38.42% of the Community total, Romania – 428,813.33 tonnes, share of 15.28% and France – 411,226.67 tonnes respectively 14.66%). In terms of performance per unit of production, Croatia, Greece, Italy, Slovenia and Spain stand out with levels above 3,000 kg/ha. The study presents the producer price situation ($/t). There is a multi-annual Community average of 381.36$/t, with extreme values of 307$/t for Romania (2020) and 566$/t for Spain (2019), and the total amplitude of variation recorded a level of 259$/t. At Community level, the evolution of the indicator is uneven, a phenomenon that is also manifested for the vast majority of the component states.*

***Key words*****:** *evolution, price, production, soybeans, variation*

## INTRODUCTION

Soybeans, is a crop plant with a considerable age (about 3,000 years), native to eastern Asia, which currently has a large range of varieties, being widely cultivated worldwide [11].

Soya is distinguished by a multiple processing at industrial level, this raw material generating products such as food oil, protein flour, protein concentrates, etc.Currently, soya, along with sunflower and rapeseed, is an oilseed crop successfully used in human diets [9]. Soy, can be used as a cheap source of protein in the human diet, its cost is lower than that of animal proteins [2]. Soybean oil can be used as a biofuel, influencing air quality by decreasing the degree of pollution [10]. In the fodder of different species of animals (swine, cattle, sheep) soya is used in various forms (ground, combined fodder, green mass, hay, silage, beanstalks and rinds). From a technological point of view, it is worth mentioning the character of good forerunner (for a wide range of cultures), an aspect related to its belonging to the *Fabaceae* or *Leguminosae* family.

Soya is a cultivated plant also in the form of genetically modified organisms. From this point of view, however, Community policy is restrictive.As a result, the main growers worldwide are represented by the USA, Brazil, Argentina, Paraguay and Canada (89.9 million ha) [3]. Genetically modified soya may be of interest to production due to technological specificities [1].

Soya can be practiced, as a crop, also in an organic system, but at present, the cultivated areas are somewhat reduced [7].

At international level, we can also talk about an intense trade with soybeans, but for Romania, this article presents a deficient net trade balance [8].

In the case of the European Union, according to FAO data [4], we can say that soya is not a crop of particular importance, if we analyze the related area and the total production (about 900,000 ha and 2,800,000 t respectively).This aspect is determined by the

climatic conditions but also by the prices charged on the international market [6].

## MATERIALS AND METHODS

In order to prepare the paper, it was operated with the manufacturer price ($/t) for soybeans seeds, which is presented at UE and national level.The database consulted shall be that of the FAO. Prices in US dollars are equal to the producer's prices in local currency, which have been converted into dollars based on the exchange rate of the selected year [5]. The main source of the exchange rate used is the IMF.

The analysis refers to the period of time between 2018 and 2020, to which was added the average of the period, thus constituting a dynamic series consisting of 4 terms.

The analysis was carried out both at EU and national level (27 component states), presenting the positioning of each country in relation to the level of the average Community price, the absolute variations of the indicator (±$/t) and the dynamics of the indicator (%).There are no production dates for Belgium, Cyprus, Denmark, Estonia, Finland, Ireland, Latvia, Luxembourg, Malta, The Netherlands, Portugal and Sweden, and in the case of price there are no data for the above countries, but also for the Czech Republic, Greece, Italy, Lithuania and Poland.

The method of comparison in time and space and the method of percentages are used as analysis tools.

## RESULTS AND DISCUSSIONS

Table 1, contains the data related to the specific situation, in terms of price for soya - national and Community levels (under the conditions mentioned in the previous chapter - no data for Spain in 2020).

At the level of 2018, the average price at Community level was 399.70$/t, against which there were both supra-unit and sub-unit values at the level of the component countries. Thus, Austria and Spain are characterized by supra-unit levels: 405 and 566 $/t respectively. Sub-unit levels reached: 399 $/t in Slovakia and Hungary, 393 $/t for Bulgaria, 384 $/t each for France and Germany, 367 $/t for Slovenia, 358 $/t for Croatia and 342$/t for Romania.

The year 2019 is characterized by price variation limits from 307 $/t for Romania to 532$/t in the case of Spain. Consequently, we are talking about countries that recorded levels lower than the reporting base (community level of indicator – 360.70 $/t) - 352 $/t Austria, 333 $/t Bulgaria, 328 $/t Croatia, 343 $/t Slovakia, 329 $/t Slovenia and 357 $/t Hungary, but even higher - 364 $/t Germany.

Table 1. Price situation in the European Union ($/t)

| No. | Specification | Year | | | Period average** | |
|---|---|---|---|---|---|---|
| | | 2018* | 2019* | 2020* | Effective | % beside community level |
| 1 | Austria | 405 | 352 | 389 | 382.00 | 100.17 |
| 2 | Bulgaria | 393 | 333 | 390 | 372.00 | 97.55 |
| 3 | Croatia | 358 | 328 | 384 | 356.67 | 93.53 |
| 4 | France | 384 | 362 | 398 | 381.33 | 99.99 |
| 5 | Germany | 384 | 364 | 404 | 384.00 | 100.69 |
| 6 | Romania | 342 | 307 | 349 | 332.67 | 87.23 |
| 7 | Slovakia | 399 | 343 | 373 | 371.67 | 97.46 |
| 8 | Slovenia | 367 | 329 | 367 | 354.33 | 92.91 |
| 9 | Spain | 566 | 532 | *** | 549.00 | 143.96 |
| 10 | Hungary | 399 | 357 | 399 | 385.00 | 100.95 |
| 11 | Community level | 399.70 | 360.70 | 383.67 | 381.36 | 100 |

Source: *http://www.fao.org/faostat/fr/#data/PP(03.03.2022).
** own calculation;***missing data.

If we refer to the specific situation of 2020, we find a Community price of 383.67 $/t, against which the component states have positioned themselves as presented in Table 1.

As we may see from Table 1, overshoots were registered by Germany – 404 $/t, Hungary – 399 $/t, France – 398 $/t, Bulgaria – 390 $/t, Austria – 389 $/t, Croatia – 384 $/t, and decreases by Romania – 349 $/t, Slovakia – 373 $/t, Slovenia – 367 $/t.

Based on the annual statements presented above, the average of the period characterized by a Community level of the indicator of 381.36 $/t was determined.Compared to this state of affairs, the component states were positioned as follows: sub-unitary levels: 99.99% France – 381.33 $/t, 97.55% Bulgaria – 372 $/t, 97.46% Slovakia – 371.67 $/t, 93.53% Croatia – 356.67 $/t, 92.91% Slovenia – 354.33 $/t, 87.23% Romania – 332.67 $/t (Fig. 1); supra unit levels: 100.17% Austria – 382 $/t, 100.69% Germany – 384 $/t, 100.95% Hungary – 385$/t, 143.96% Spain – 549 $/t (Fig. 2).

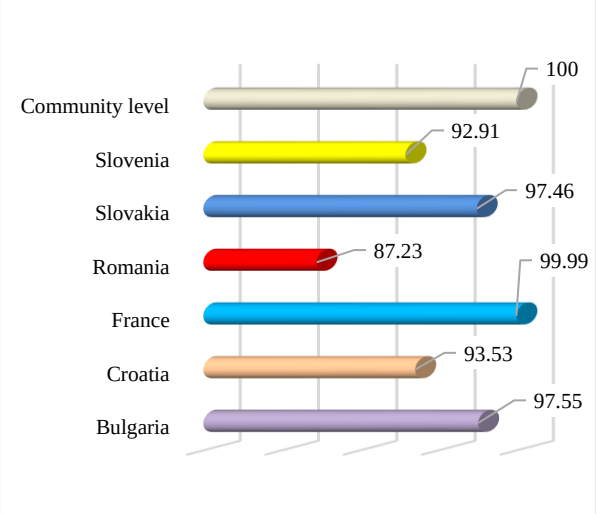


Fig. 1. Positioning of states with prices below the Community average level (%)
Source: own calculation.

Table 2 shows the absolute price variation ($/t) at the level of the component states of the European Union, as well as at the level of the Region. For Austria, there are increases for 2020 compared to the reporting base (+37.0 $/t), but also decreases in 2019 and for the period average (-53.0 and -7.0 $/t, respectively).

Bulgaria, is characterized by the existence of two situations when the indicator decreases, compared to the reference term – 2019 and the average of the period (-60.0 and -18.0 $/t) and by a situation of increase in the indicator level – year 2020 (+57.0 $/t).

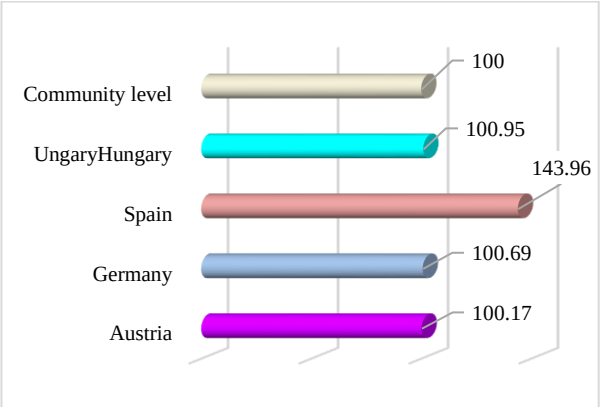


Fig. 2. Positioning of states with prices above the Community average level (%)
Source: own calculation.

Table 2. The absolute price variation * (±$/t)

| No. | Specification | ±Δ 2019vs. 2018 | ±Δ 2020 vs. 2019 | ±Δ media vs. 2020 |
|---|---|---|---|---|
| 1 | Austria | -53.0 | +37.0 | -7.0 |
| 2 | Bulgaria | -60.0 | +57.0 | -18.0 |
| 3 | Croatia | -30.0 | +56.0 | -27.33 |
| 4 | France | -22.0 | +36.0 | -16.67 |
| 5 | Germany | -20.0 | +40.0 | -20.0 |
| 6 | Romania | -35.0 | +42.0 | -16.33 |
| 7 | Slovakia | -56.0 | +30.0 | -1.33 |
| 8 | Slovenia | -38.0 | +38.0 | -12.67 |
| 9 | Spain | -34.0 | - | - |
| 10 | Hungary | -42.0 | +42.0 | -14.0 |
| 11 | Community level | -39.0 | +22.97 | -2.31 |

Source: *own calculation.

In the case of Croatia, there is a trend of increasing the level of the indicator in 2020 (+56.0 $/t) as well as two downward trends in 2019 and for the average period(-30.0 and -27.33 $/t, respectively).

In the case of France, it is found that the indicator showed two downward trends (-22.0 and -16.67 $/t for 2019 and for the period average, respectively) and an upward trend for 2020 (+36.0 $/t).

Germany is characterized by the existence of a situation when the indicator increases, compared to the reference period – year 2020 (+40.0 $/t) and by two situations of decrease in the level of the indicator – the year 2019 and the average of the period (20.0 $/t each).

In the case of Romania, there are two downward trends in the level of the indicator

for 2019 and for the average of the period (-35.0 and -16.33 $/t, respectively) as well as an upward trend in the case of 2020 (+42.0 $/t) respectively.

Slovakia shows downward trends for 2019 and the average period (-56.0 and -1.33$/t, respectively), as well as an upward trend for 2020 (+30.0 $/t).

For Slovenia, the price decreased -compared to the reporting base- by 38.0 $/t in 2019 and by 12.67 $/t for the average period, and increased in 2020 compared to 2019 by 38.0 $/t.

Spain shows a decrease of 34.0$/t in 2019 compared to 2018.

In the case of Hungary, it is found that the indicator showed an upward trend for 2020 (+42.0 $/t) and two decreasing trends for 2019 and for the average period (-42.0 and -14.0 $/t).

At community level, the price fluctuation is observed, the negative differences characterizing the year 2019 and the average period (-39.0 and -2.31 $/t, respectively), and in the case of 2020 there is an increasing level of the indicator compared to the reference term (+22.97 $/t – Fig. 3).

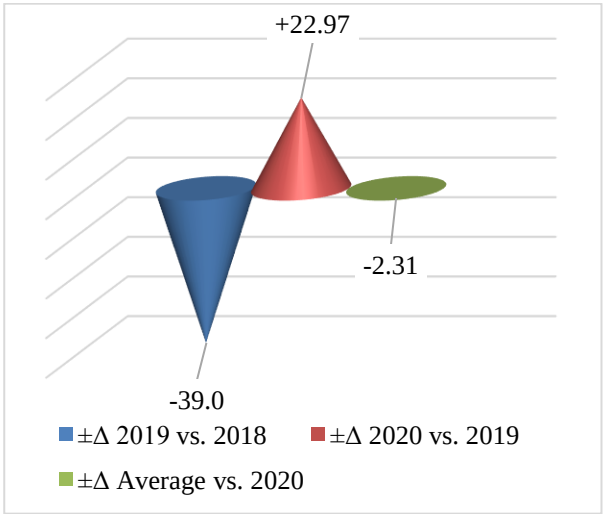


Fig. 3. Absolute change in the community average price ($/t)
Source: own calculation.

The marketing price recorded a multi-annual Community average of 381.36$/t, with extreme values of 307$/t for Romania (2020) and 566$/t for Spain (2019), and the total amplitude of variation recorded a level of 259.0$/t.

As for the indicator's annual variation amplitudes, they were 224.0$/t in 2018, 225.0$/t in 2019, 55.0$/t for 2020 and 216.33$/t for the period average (Fig. 4).

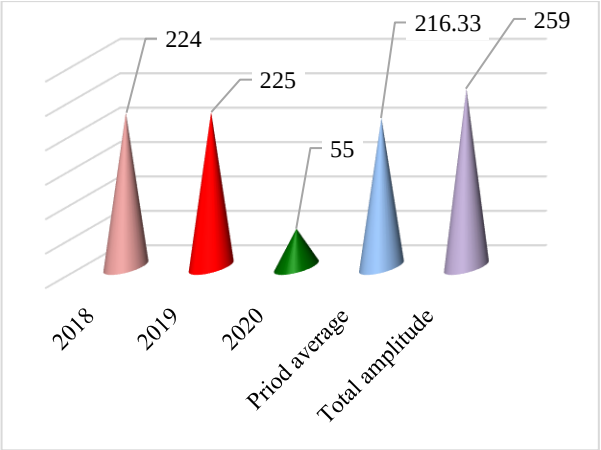


Fig. 4. Total and annual amplitude of price change ($/t)
Source: own calculation.

If we analyse the indicator below the ratio of the variation amplitude for each reference level (national and Community), the changes are shown in Fig. 5.

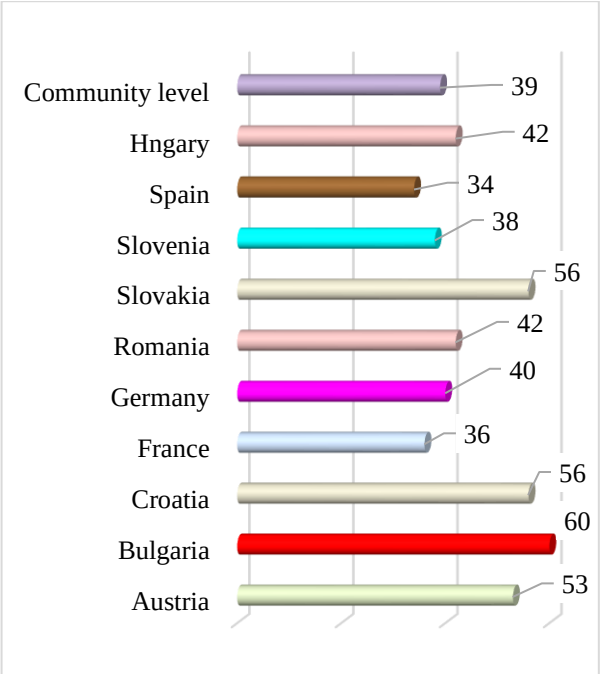


Fig. 5. Amplitude of price variation, at national and community level ($/t)
Source: own calculation.

From Fig. 5, we may see: 34.0 $/t in Spain; 36.0 $/t in France; 38.0 $/t for Slovenia; 39.0 $/t at European Union level; 40.0 $/t in Germany; 42.0 $/t each for Romania and Hungary; 53.0 $/t in the case of Austria; 56.0

$/t each for Croatia and Slovakia; 60.0 $/t at the level of Bulgaria.

Table 3 shows the price dynamics at communityand national level.

Table 3. Purchase price dynamics (%), at community and national level*

| No. | Specification | Year | | | | | | Period average | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2018 | | 2019 | | 2020 | | | |
| | | Mbi | Fbi | Mbi | Fbi | Mbi | Fbi | Mbi | Fbi |
| 1 | Austria | 100 | 100 | 86.91 | 86.91 | 96.05 | 110.51 | 94.32 | 98.20 |
| 2 | Bulgaria | 100 | 100 | 84.73 | 84.73 | 99.24 | 117.12 | 94.66 | 95.38 |
| 3 | Croatia | 100 | 100 | 91.62 | 91.62 | 107.26 | 117.07 | 99.63 | 92.88 |
| 4 | France | 100 | 100 | 94,27 | 94,27 | 103.65 | 109.94 | 99.30 | 95.81 |
| 5 | Germany | 100 | 100 | 94.79 | 94.79 | 105.21 | 110.99 | 100.0 | 95.05 |
| 6 | Romania | 100 | 100 | 89.77 | 89.77 | 102.05 | 113.68 | 97.27 | 95.32 |
| 7 | Slovakia | 100 | 100 | 85.96 | 85.96 | 93.48 | 108.75 | 93.15 | 99.64 |
| 8 | Slovenia | 100 | 100 | 89.65 | 89.65 | 100.0 | 111.55 | 96.55 | 96.55 |
| 9 | Spain | 100 | 100 | 93.99 | 93.99 | - | - | 96.99 | - |
| 10 | Hungary | 100 | 100 | 89.47 | 89.47 | 100.0 | 111.76 | 96.49 | 96.49 |
| 11 | Community level | 100 | 100 | 90.24 | 90.24 | 95.99 | 106.37 | 95.41 | 99.40 |

Source: *own calculation.

Austria shows a fluctuating evolution – over time. The fixed base indices range from 86.91% for 2019 to 96.05% in 2020. At the level of the indices with the mobile base, the limits of variation were of 86.91 and 110.51% in the case of 2019 and 2020, respectively,

Bulgaria shows an uneven development of the indicator. As a result, the price decreases in 2019 compared to 2018 by 15.27%, its increase in 2020 compared to the second reference term (+17.12%). The average period is lower compared to both reporting bases (-5.34 and -4.62%).

Croatia's situation is customized by the fact that there are decreases in 2019 compared to 2018 (8.38%), and in the case of 2020 there are increases of 7.26 and 17.07% compared to the terms of reference. The average period is lower by 0.37 and 7.12% compared to the reporting bases.

In the case of France, the indicator decreases in 2019 by 5.73% compared to the first term of the dynamic series, then in 2020 there are increases (+3.65% compared to the first term of the dynamic series and +9.94% compared to the previous year), and the average is lower by 0.70 and 4.19% respectively compared to the specific situation of the years 2018 and 2020.

If we refer to the specific situation of Germany, it is found that the first reporting base is exceeded only in 2020 (+5.21%). As for the indices with the mobile base, they are subunits for 2019 and for the average period (94.79 and 95.05% respectively). It is worth noting the similarity between the levels of 2019 and the average of the period.

For Romania, the evolution trend is fluctuating (decrease in 2019 compared to 2018 by 10.23%, increases in 2020 by 2.05 and 13.68% compared to the terms of reference). In the case of the average period, the indices are subunits – 97.27 and 95.32% respectively.

Slovakia is similarly to that of most of the countries presented so far. Thus, there are decreases compared to the terms of comparison by 14.04% in 2019, 6.52% in 2020 and by 6.85% for the average period (compared to 2018), but also their exceedances by 8.75% in 2020 compared to the previous year of the dynamic series.

Slovenia is characterized by the existence of a single supra-unit value, of the dynamics indices, in 2020 (111.55% - indices with the mobile base), equal for the same year (compared to 2018), respectively the subunit in 2019 (89.65%) and for the average of the period (96.55%).

In the case of Spain, the indicator decreases in 2019 by 6.01% compared to the first term of the dynamic series, then the average decreases by 3.01% compared to the specific situation of 2018.

Hungary has supra-unit values of the indices in dynamics in 2020 (111.76% compared to

the previous year), equi unit values for the same year compared to the situation in 2018, respectively subunit in 2019 (89.47%) and for the average period (96.49%).

At Community level, the dynamics of the indicator contains supra-unit values only for 2020 (1.06% advance of the situation in 2019), and in the rest appear sub-unit values, as follows: 90.24% for 2019, 95.99% in 2020 compared to the first term of the dynamic series, 95.41 and 99.40% for the average period of the period.

## CONCLUSIONS

At Community level, price developments are uneven, a phenomenon which is also manifested for the vast majority of states (Austria, Bulgaria, Croatia, France, Germany, Romania and Slovakia). There are other trends such as a downward one for Spain, as well as some fluctuating ones with stabilization trends for Slovenia and Hungary.

The price is influenced by the supply-demand ratio, and it can also be influenced by other factors: the "strategic" character of the product, the intervention of the economic actors within the chain, the way of managing the stocks, etc.

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