

## TRENDS IN ROMANIA'S AGRICULTURAL PRODUCTION

Mircea Adrian GRIGORAS

University of Agricultural Sciences and Veterinary Medicine Cluj Napoca, Research and Innovation Department, 3 Manastur Street, 400372, Cluj-Napoca, Romania, Phone: +40 264596384/400, Fax: +40 264592793, Email: mircea.grigoras@usamvcluj.ro

**Corresponding author:** mircea.grigoras@usamvcluj.ro

### Abstract

*Agriculture is an important sector in Romania's economy. Crop production brings the highest contribution to agricultural production value, being followed by animal production. Cereal cropping is very important in Romania, and wheat and maize are the top cereal crops. Also sunflower seeds production is very good positioning Romania in the top in the EU. Vegetable and mainly fruit sectors registered an important decrease of production. Meat production declined in case of beef and pork, but it recorded a slight increase for mutton and goat meat. Poultry meat recorded a continuous development because of the high efficiency in broilers fattening and lower consumer price compared to beef and pork. Milk production declined due to the reduction of cattle livestock and the small yield/cow. In order to balance demand/offer ration, in the domestic market there many products coming from import, which deeply affect Romanian producers. The financial support offered by the EU for the Horizon 2014-2020 must be used in order to increase agricultural production. Farmers to join their capital and develop their business in associative forms which could help them to obtain farm inputs at cheaper costs, lower production costs, and to sell better their products in the market.*

**Key words:** agricultural products, market, Romania, trends

### INTRODUCTION

Agriculture is an important economic sector assuring food for population, raw materials for processing industry and agro-food products for export. Its contribution to GDP is 5.6 %. It registered a continuous development in the last decade, and its future depends on a modern technical endowment, investments, employment of high qualified persons, a corresponding farm structure able to assure a higher productivity, economic efficiency and competitiveness. ( Popescu Agatha, 2005b) [35].

In Romania, there are good soil and climate conditions for crop production and animal production. However, the climate change in the sense of higher temperatures, severe droughts, rainfalls, extreme phenomena have affected and could continue to have a negative influence on agricultural production ( Cofas *et al.*, 2014) [2].

In Romania there are 3.56 million farm, most of them being subsistence and semisubsistence farms, of a small size, but ! % of the total number of farms are working

about 56 % of the arable land. Extensive cropping is largely applied, but also, in the commercial farms, we can discuss about modern agriculture. the need to assure environment protection and sustainable development of agriculture left room for conservation agriculture as an alternative to the conventional agriculture (Grigoras *et al.*, 2012a, b) [6, 7].

The EU policies regarding the reform in agriculture and the financial support allowed the establishment of new farms and the modernization of the old ones with new equipment and modern technologies with a substantial impact on the economic performance. Unfortunately, Romania was not able to use all the allotted funds allotted by the EU, because the difficulties regarding the ownership titles, farmers' lack of financial resources to start their business, the unattractive credit system and the lack of experience in setting up projects ( Grigoras *et al.*, 2006) [5]. The new Horizon 2014-2020 Programme will continue to support Romanian farmers.

In this context, the present paper had the

purpose to analyze the evolution of agricultural production in Romania in the period 2008-2013 highlighting the major trends and what can be done to improve the results in agriculture.

## MATERIALS AND METHODS

The paper is based on the data collected from the National Institute of Statistics data bases, and the indices with fixed basis were used to emphasize the difference between the level recorded in the year 2013 compared to the year 2008.

The main aspects approached in the paper were: the evolution of GDP produced in agriculture and its share in Romania's GDP, the evolution of the value of agricultural

production and of its three components: crop production, animal production and agricultural services, the evolution of crop production by main crops, the evolution of animal production by main items, the evolution of the production per inhabitant for the main agricultural products.

## RESULTS AND DISCUSSIONS

### Agriculture contribution to GDP.

Agriculture is an important economic branch in Romania and it gives its contribution to GDP together with industry, trade, buildings, transportation etc. In the period 2006-2013, Romania's GDP increased by 82.3 % from Lei 344.6 Billion current prices in 2006 to Lei 628.5 Billion current prices in 2013.

Table 1. The dynamics of GDP produced in agriculture and its share in Romania's GDP ( Lei Billion current prices)

|                                 | 2006  | 2007  | 2008  | 2009 | 2010  | 2011  | 2012  | 2013  | 2013/2006<br>% |
|---------------------------------|-------|-------|-------|------|-------|-------|-------|-------|----------------|
| GDP                             | 344.6 | 416.0 | 514.6 | 498  | 523.6 | 557.3 | 586.7 | 628.5 | 182.3          |
| GDP IN AGRICULTURE              | 26.8  | 23.9  | 34.4  | 31.6 | 29.8  | 36.3  | 28.6  | 35.1  | 130.9          |
| SHARE OF GDP IN AGRICULTURE (%) | 7.7   | 5.7   | 6.7   | 6.3  | 5.7   | 6.5   | 4.9   | 5.6   | -              |

Source: Own calculations based on Statistical Yearbooks Romania, NIS

The GDP produced in agriculture, forestry and hunting accounted for Lei 35.1 Billion current prices in 2013, being by 30.9 % higher than in 2006.

As a result, the contribution of agriculture, hunting and forestry to Romania's GDP declined from 7.7.% in the year 2006 to 5.6 % in 2013 ( Table 1).

**Agricultural production value.** In the period 2006-2013, the value of agricultural production increased by 54.9 % from Lei 50,649 Million current prices in 2006 to Lei 78,464 million current prices in 2013.

Crop production increased by 71.8 % from Lei 31,327 Million in 2006 to Lei 53,843 Million in 2013, Animal production increased by 26.6 % from Lei 18,849 Million in 2006 to Lei 23,876 Million in 2013. Finally, Agricultural services increased by 57.3 % from Lei 473 Million in 2006 to Lei 744 Million in 2013 (Table 2).

The contribution of the three sectors to the agricultural production value was 68.6 % crop production, 30.4 % animal production and 1 % agricultural services.

Compared to the year 2006, it is obvious that crop production remained on the top position, followed by animal production.

However, while the crop production increased its share from 61.9 % in 2006 to 68.6% in 2013, the animal production declined its weight from 37.2 % in 2006 to 30.4 %.(Table 3).

Analyzing the situation of agricultural production by development region, in the year 2013, we found the following: South Muntenia 19.9 %, South East 16.8 %, North East 16.7%, North West 12 %, Centre 11.3 %, West 11.2 %, South West Oltenia 11.1 %, and Bucharest Ilfov 1 %.

Table 2. The dynamics of Agricultural Production Value in Romania, 2006-2013 ( Lei Million, current prices)

|                               | 2006   | 2007   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | 2013/2006<br>% |
|-------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|----------------|
| AGRICULTURAL PRODUCTION VALUE | 50,649 | 47,700 | 66,994 | 59,928 | 64,452 | 76,508 | 64,259 | 78,464 | 154.9          |
| CROP PRODUCTION               | 31,327 | 28,723 | 45,742 | 35,735 | 43,488 | 54,180 | 40,169 | 53,843 | 171.8          |
| ANIMAL PRODUCTION             | 18,849 | 18,291 | 20,536 | 23,441 | 20,407 | 21,784 | 23,555 | 23,876 | 126.6          |
| AGRICULTURAL SERVICES         | 473    | 684    | 716    | 751    | 447    | 545    | 535    | 744    | 157.3          |

Source: Own calculations based on Statistical Yearbooks Romania, NIS

Table 3. Structure of agricultural production, Romania, 2006-2013 (%)

|                       | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|-----------------------|------|------|------|------|------|------|------|------|
| CROP PRODUCTION       | 61.9 | 60.2 | 68.3 | 59.6 | 67.5 | 70.8 | 62.5 | 68.6 |
| ANIMAL PRODUCTION     | 37.2 | 38.3 | 30.6 | 39.1 | 31.6 | 28.5 | 36.7 | 30.4 |
| AGRICULTURAL SERVICES | 0.9  | 1.5  | 1.1  | 1.3  | 0.9  | 0.7  | 0.8  | 1.0  |

Source: Own calculations based on Statistical Yearbooks Romania, NIS

**Crop production.** Romania's crop production is deeply oriented to cereal cropping due to the fertile soil in the South, South West and South East part of the country. Wheat and maize are the main cereals cultivated, but also barley, rye and oats.

**Cereal crops** are profitable and Romania can obtain high yields if climate conditions are favorable. There were years with good productions and also years with lower productions.

The high cost of the farm inputs ( fertilizers, herbicides etc) do not allow each farmer to apply modern technologies, and for this reason high performance is achieved in the farms with a good technical endowment and high qualified managers.

However, the cereal yields are lower compared to the ones recorded in other EU countries, but cereal production is enough high due to the large cultivated surfaces. For maize production Romania was recently in the top in the EU, being followed by France. (Popescu Agatha, 2012b, Popescu Agatha, 2012d) [27,29].

The higher and higher cereal production led to unbalance demand/offer ratio in the market, and as a consequence, the price at the farm gate declined. However, cereal production continue to cover the market needs

and to contribute to the agro-food export of Romania. Romania is a cereal producer, exporter and importer. ( Popescu Agatha, 2015d) [37].

In the analyzed period, crop production registered a positive evolution in case of cereals. Cereals production increased by 32.6 % from 15,759.3 thousand tons in 2006 to 20,897 thousand tons in 2013, the year with the highest performance.

Wheat and maize are the main cereals cultivated in Romania. Wheat production increased by 32 % from 5,526.2 thousand tons in 2006 to 7,296 thousand tons in 2013. Maize production increased by 25.8 % from 8,984.7 thousand tons in 2006 to 11,305 thousand tons in 2013. This performance was a result of the cultivated area and average production per ha.

**The oleaginous crops** are more important in the agricultural production structure because of the need of oil for human consumption, and also for producing biodiesel. Romania is the most important producer and exporter of sunflower seeds in the EU (Arghiroiu *et al*, 2015, Popescu Agatha, 2012c) [1, 28]

Therefore, among the oilseeds crops, sunflower is in the top position. Its production increased by 40.3 % from 1,526.2 thousand tons in 2006 to 2,142 thousand tons in 2013. This was determined by the farmers wish to

extend the cultivated surface and benefit of the subsidies allotted for this crop.

Sugar beet registered a lower production across the time, reaching 1,029 thousand tons

in 2013, by 10.7 % less than in 2006. The reduced cultivated surface was determined by the high production cost per ha and the fail of processing industry.

Table 5. Evolution of crop production, Romania, 2006-2013 ( thousand tons)

|            | 2006     | 2007    | 2008     | 2009    | 2010     | 2011     | 2012     | 2013   | 2013/2006 % |
|------------|----------|---------|----------|---------|----------|----------|----------|--------|-------------|
| CEREALS    | 15,759.3 | 7,814.8 | 16,826.4 | 14,873  | 16,712.9 | 20,842.2 | 12,824.1 | 20,897 | 132.6       |
| WHEAT      | 5,526.2  | 3,044.5 | 7,181    | 5,202.5 | 5,811.8  | 7,131.6  | 5,297.7  | 7,296  | 132.0       |
| MAIZE      | 8,984.7  | 3,853.9 | 7,849    | 7,973.3 | 9,042    | 11,717.6 | 5,953.4  | 11,305 | 125.8       |
| SUNFLOWER  | 1,526.2  | 546.9   | 1,169.9  | 1,098   | 1,262.9  | 1,789.3  | 1,398.2  | 2,142  | 140.3       |
| SUGAR BEET | 1,152.2  | 748.8   | 706.7    | 816.8   | 8367.9   | 660.5    | 719.8    | 1,029  | 89.3        |
| POTATOES   | 4,015.9  | 3,712.4 | 3,649    | 4,004   | 3,283.9  | 4,076.6  | 2,465.2  | 3,290  | 81.9        |
| VEGETABLES | 4,138.9  | 3,116.8 | 3,819.9  | 3,901.9 | 3,863.6  | 4,176.3  | 3,535.3  | 3,961  | 95.7        |
| FRUIT      | 1,486.4  | 1,085.8 | 1,179.2  | 1,323   | 1,419.6  | 1,479.9  | 1,128.6  | 768    | 51.6        |

Source: Own calculations based on Statistical Yearbooks Romania, NIS

**Potatoes production** decreased by 18.1 % from 4,015.9 thousand tons in 2006 to 3,290 thousand tons in 2013. This was the result of the climate change during the last decade, the deep droughts in 2007 and 2012, producers low financial resources for irrigation, high production cost for potato cropping.

Despite that during the last years, the Romanian market was invaded by imported potatoes coming mainly from Poland affecting local producers, potato will remain a basic food for the population and will continue to be produced. ( Pop *et al.*, 2012, Vlad *et al.*, 2014, Soare, 2015) [15, 39, 41]

**Vegetable production** declined by 4.3 % from 4,138.9 thousand tons in 2006 to 3,961 thousand tons in 2013. However, the extend of production in green houses has deeply supported the extend of the vegetable production. Romania is a producer, but also exporter and importer of vegetables (Dragan, 2012, Popescu Agatha, 2013d) [3, 33]

**Fruit production** registered the highest decrease, - 48.4 %, from 1,486.4 thousand tons in 2006 to 768 thousand tons in 2013. (Table 5). This was due to the old plantations, the high cost to maintain them, and the extreme atmospheric phenomenon for instance: snowing when the fruit trees were in bloom early in spring season. Fruit sector needs new plantations, therefore investments and hybrids resistant to drought, diseases and pests, organization of the local producers in associative forms in order to assure farm

inputs at lower costs and build stores to sell fruit in the extra-season when the price is higher. (Dragan, 2012, Pirvutoiu *et al.*, 2013) [3, 14]

The structure of crop production includes: cereals 34.9 %, potatoes 10.5 %, oilseeds crops 9.2 %, fodder plants 10 %, vegetables 17.2 %, fruit and grapes 10.3 % and others 7.9 %.

**Animal production.** An important place in animal production is occupied by meat production.

**Meat production** registered a decline in the analyzed period by 7.3 % from 1,401 thousand tons in 2006 to 1,300 thousand tons in 2013. This was due to the decrease recorded by cattle and swine species. the deepest decline was registered by cattle meat production, - 39.7 % and pork production - 11.7 %. The decline in beef and pork output was due to the decrease in cattle and pig livestock, the reduced live weight at slaughter, and due to the small price per kg live weight offered by processors to farmers ( Draghici *et al.*, 2014, Pirvutoiu *et al.*, 2010) [4, 10]

The reduced consumption of beef and even of pork is due to the selling price and small family income, mainly after 2009, when the effects of the economic crisis started to appear. ( Popescu Agatha, 2012a, 2015c, Soare *et al.*, 2015) [26, 36, 40].

Beef consumption must be encouraged in order to diminish the gap between Romania and other EU countries. In this respect, more

attention will be given in the future to specialized breeds for meat production (Grodea, 2015) [9].

In case of sheep and goat, meat production increased by 2.9 %, because of the chance for export (Popescu Agatha, 2013c) [32].

Table 6. Evolution of animal production, Romania, 2006-2013

|                    | MU          | 2006   | 2007   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | 2013/2006 % |
|--------------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|-------------|
| MEAT (LIVE WEIGHT) | THOU TONS   | 1,401  | 1,503  | 1,426  | 1,443  | 1,305  | 1,357  | 1,332  | 1,300  | 92.7        |
| -CATTLE            | THOU TONS   | 318    | 333    | 306    | 264    | 205    | 212    | 198    | 192    | 60.3        |
| -PIGS              | THOU TONS   | 618    | 642    | 605    | 585    | 553    | 557    | 555    | 546    | 88.3        |
| -SHEEP AND GOAT    | THOU TONS   | 101    | 110    | 104    | 104    | 100    | 110    | 107    | 104    | 102.9       |
| -POULTRY           | THOU TONS   | 361    | 416    | 410    | 489    | 446    | 477    | 471    | 457    | 126.5       |
| MILK               | THOU HL     | 64,607 | 61,048 | 59,016 | 56,383 | 49,129 | 50,074 | 48,337 | 48,728 | 75.4        |
| WOOL               | TONS        | 19,378 | 21,025 | 22,075 | 22,352 | 20,457 | 19,026 | 19,713 | 20,719 | 106.9       |
| EGGS               | THOU PIECES | 7,429  | 6,522  | 6,692  | 6,211  | 6,199  | 6,327  | 6,398  | 6,388  | 85.9        |
| HONEY              | TONS        | 18,195 | 16,767 | 19,833 | 19,937 | 22,222 | 24,127 | 18,000 | 21,000 | 115.4       |

Source: Own calculations based on Statistical Yearbooks Romania, NIS

Poultry farming is continuously developing, Romania being both a producer, but also an exporter and importer. Broilers fattening is a profitable activity assuring the highest economic efficiency because the production cost is smaller compared to pig fattening or steer fattening. Its development was encouraged by consumer preferences for a lean and white mean, with a lower cholesterol content and sold at a cheaper price than pork and beef (Pirvutoiu et al., 2012b, Popescu Agatha, 2007b) [13, 23].

Chicken meat is well developing in the EU-28 and in all the CEECs due to its advantages for farmers and for consumers. (Popescu Agatha, 2007a, Sandu, 2015). [22, 38].

In the analyzed period, the poultry meat registered the highest growth, +26.5%.

**Milk production.** Milk production is important in any country, as milk is a strategic product, and also a basic food for children adults and old people, and also for animals. Romania has a good potential to produce milk, but in the last decades, the cattle stock declined with a negative influence on milk production. Compared to other EU countries, Romania has the lowest milk yield ( Grodea,

2013) [8].

Farm size is very small, just 2-5 cows/household, and it is farm away from economic efficiency, which starts from over 4,000 kg/cow/lactation.(Popescu Agatha, 2003, Popescu Agatha, 2005b, Popescu Agatha, 2009) [17, 19, 24].

Milk quality is another problem: number of pathogenic germs, somatic cells, and fat content. Also, the manual milking practiced in the most of farms, except the commercial farms where there are milking parlors, the lack of milk tanks, collection points are other aspects influencing milk quality. For this reason, milk price offered by processors is many times unsatisfactory for dairy farmers, because it can not cover the production cost ( Popescu Agatha, 2006a) [20].

In the analyzed period, milk production declined by about 25 % from 64,607 thousand hl in 2006 to 48,728 thousand hl in 2013. This was due to the decline in cow and buffalo live stock, and to the low yield/head.(Popescu Agatha, 2015a) [34].

The demand/offer ratio in the domestic market is unbalanced because it is not enough raw milk for processing industry, and

processors buy raw milk and mainly powder milk from abroad affecting Romanian producers.(Popescu Agatha, 2011) [25].

Sheep and goat milk production had an increasing trend because of the special quality

of this type of milk. Production was stimulated by an increased number of sheep and goats (Popescu Agatha, 2013b) [31].

Table 7. Evolution of agricultural production per inhabitant, Romania, 2006-2013

|            | MU     | 2006  | 2007  | 2008  | 2009  | 2010  | 2011    | 2012  | 2013  | 2013/2006 % |
|------------|--------|-------|-------|-------|-------|-------|---------|-------|-------|-------------|
| CEREALS    | KG     | 730.1 | 362.8 | 819.3 | 730.2 | 825.5 | 1,034.5 | 638.1 | 104.3 | 142.8       |
| WHEAT      | KG     | 256   | 141.4 | 349.6 | 255.4 | 287   | 354     | 263.6 | 364   | 142.1       |
| MAIZE      | KG     | 416.3 | 178.9 | 382.2 | 391.5 | 446.6 | 581.6   | 296.2 | 564   | 135.5       |
| SUNFLOWER  | KG     | 70.7  | 25.4  | 57.0  | 53.9  | 62.4  | 88.8    | 69.6  | 106   | 149.9       |
| SUGAR BEET | KG     | 53.4  | 35.9  | 34.4  | 40.1  | 41.4  | 32.8    | 35.6  | 52.3  | 96.06       |
| POTATOES   | KG     | 186.1 | 172.4 | 177.7 | 196.6 | 162.2 | 202.3   | 122.7 | 164.3 | 88.2        |
| VEGETABLES | KG     | 191.8 | 144.7 | 186   | 191.6 | 190.8 | 207.3   | 175.9 | 197.8 | 103.1       |
| FRUIT      | KG     | 68.9  | 50.4  | 57.4  | 65    | 70.1  | 73.5    | 56.2  | 38.3  | 55.5        |
| MEAT       | KG     | 64.9  | 69.8  | 69.4  | 70.8  | 64.5  | 67.4    | 66.3  | 67.0  | 103.2       |
| MILK       | L      | 299.3 | 283.5 | 287.3 | 276.8 | 242.7 | 248.5   | 240.5 | 248.0 | 82.8        |
| WOOL       | KG     | 0.9   | 1.0   | 1.1   | 1.1   | 1     | 0.9     | 1     | 1     | 111.1       |
| EGGS       | PIECES | 344   | 303   | 326   | 305   | 306   | 314     | 318   | 320   | 93.0        |

Source: Own calculations based on Statistical Yearbooks Romania, NIS

**Wool production** increased by 6.9 % from 19,378 tons in 2006 to 20,719 tons in 2013. However, wool has no price, being used in the countryside for producing carpets and other handicrafts.

**Egg production** declined by 14.1 % from 7,429 thousand pieces in 2006 to 6,388 thousand pieces in 2013. This was due to the decline in the number of laying hens, high production cost which determined the breeders to be more oriented to broilers' fattening which is a more profitable business. For this reason, egg imports are required to cover consumers' needs, but this affect local producers ( Pirvutoiu *et al.*, 2012a, Popescu Agatha, 2002) [12, 16].

**Honey production** has a positive evolution as long as honey is such a special healthy food for human diet and also an income source for beekeepers. The flora variety in Romania and the long tradition of apiculture of over 2,000 years favored beekeepers to keep more bee families. The number of beekeepers, bee hives, bee families and honey yield/bee family and the total honey production increased continuously.

In the analyzed period, honey production (extracted) increased by 15.4 % from 18,195 tons in 2006 to 21,000 tons in 2013. (Table 6). However, in Romania, honey consumption is

small, less than 1 kg/inhabitant compared to other EU countries and for this reason Romania make honey export (50 % of its production) in the Western countries mainly in Germany, United Kingdom and the Nordic countries (Pirvutoiu *et al.*, 2011, Popescu Agatha 2006b, 2013a) [11, 21, 30].

The average apiary size is 26 bee families, but there are apiaries with more than 400 bee families.

Profitability starts from over 100 bee families. The incentives offered by the EU encouraged the beekeepers to extend their business and produce more honey.

The structure of animal production consist of the contribution of the following sectors; cattle 25.2 %, sheep and goats 6.7%, pigs 16.9 %, poultry 20.7 %, products obtained by processing milk in the animal farm 28 % and others 2.5 %.

**Agricultural production per inhabitant.** Taking into account the dynamics of the population and the evolution of the agricultural production, the agricultural production per inhabitant increased in case of cereals ( wheat + 42.1 % and maize +35.5 %), sunflower +49.9 %, vegetables +3.1 %, meat +3.2 and wool +11.1 %, but it decreased in case of sugar beet - 3.94 %, potatoes -11.8 %, fruit -44.5 % and eggs - 7 %.(Table 7).

## CONCLUSIONS

Agriculture is an important sector in Romania's economy and will continue to be as long as about 44 % of the population is living in the rural areas, where agriculture is the main activity.

While crop production value increased, animal production value declined, leading to a smaller share of this sector in agricultural production value.

Cereal cropping is very important in Romania, and wheat and maize are the top cereal crops. Also sunflower seeds production is very good positioning Romania in the top in the EU.

The main problems are related to vegetable and mainly fruit sectors, where production registered an important decrease. The need of vegetables and fruit in the market must encourage farmers to invest in new green houses for vegetable and also in the field. New plantations of fruit trees are required to replace the old ones.

Meat production declined in case of beef and pork, but it recorded a slight increase for mutton, lamb and goat meat.

Poultry meat recorded a continuous development which will continue in the future because of the high efficiency in broilers fattening and lower consumer price compared to beef and pork.

Milk production is very much affected by the reduction of cattle livestock and the small yield/cow, and also by imports of raw milk and powder milk in the market which affects local producers.

An important aspect which must be taken into consideration as agricultural production to grow in the future is the need as farmers to join their capital and develop their business in associative forms which could help them to obtain farm inputs at cheaper costs, lower production costs, and to sell better their products in the market.

The financial support offered by the EU for Romania within the Horizon 2014-2020 Programme must be used in order to increase agricultural production.

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