

PORK MARKET CRISIS IN ROMANIA: PIG LIVESTOCK, PORK PRODUCTION, CONSUMPTION, IMPORT, EXPORT, TRADE BALANCE AND PRICE

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Abstract

The paper analyzed Romania's pork market crisis by means of pig livestock, pork production, consumption, import, export, trade balance, pork price based on the empirical data provided by NIS Tempo Online for the period 2014-2018 emphasizing the effects of the African Swine Fever (ASF). Dynamic analysis, trend analysis, descriptive statistics, regression modeling, and comparison have been the main methodological tools used in this study. Despite that pig number declined by 27.7%, in 2018 accounting for 3.92 million heads compared to 2010, and in 2019 there were lost other 486, 000 heads due to the ASF, pork production remained relatively stable at 426,100 Tons in 2018, being by only 3.3% higher than in 2014. Its level is justified by the increased live weight at slaughter and by the imports of pigs and pork carcasses. Pork consumption is 38.3kg/capita, by 15% higher than in 2010, but a little lower than 41 kg/capita, the EU-28 average. Romania's pork trade is dominated by imports, which led to a negative trade balance in 2018 of -327,010 Tons, being by 87.3 % higher than in 2014. In 2018, import represented 85% of pork production, 48.3 % of pork consumption, import dependency being 48%, and self sufficiency rate 56.5%. Export/import ratio registered 9% in terms of quantity and 5.7% in terms of value, the both figures reflecting the lowest level recorded by Romania, reflecting its status of net importing country and the inefficient trade. The ASF impact is seen in the growth of farm inputs price, production cost, and farm gate price, which since April 2019 increased from Lei 5.61 to Lei 8 per kg live weight in the month of December, that is by 42.6%, and the massive imports of pigs and carcasses practiced by the processors affecting the local breeders. To recover the pork market in Romania, both the breeders and processors have to respect the strategy and measures imposed by the authorities regarding pig growing, transportation, slaughtering, to sustain the development of pork production, its quality, and export and to increase efficiency and competitiveness of pork sector.

Key words: pig number, pork production, import, export, trade balance, import dependency, self sufficiency rate

INTRODUCTION

For sustaining its vital functions, the human body needs a balanced diet including all the nutrients, among which meat occupies an important position, because it is the main source of high value proteins (in average about 22%), amino acids, fats, fatty acids, vitamins (A, B group and folic acid), minerals (zinc, iron, potassium, magnesium, selenium, sodium), about 70% water and also a high digestibility (0.92). The chemical composition differ from a meat sort to another [1].

Pork lean meat has a high importance for maintaining health, a reason to be included in high protein diets for reducing the risks of cardiovascular disease, diabetes, for regulating blood pressure, decreasing body weight and increasing satiety [16].

Pork has been for a long period of time the most consumed meat in the world. Even at present it is consumed by hundreds of millions people from all the continents and in almost all the countries. Only the Jewish and Muslim people do not consume pork due to their religion which does not allow this.

At present, pork is ranked the second after poultry meat, as during the last decades poultry industry has developed much faster advantaging the producers and also offering a meat rich in high quality protein, and with less cholesterol.

The world pork production increased and in 2019 it accounted for 106.1 Million tons (Carcass Weight Equivalent), the main producing countries being China, EU, USA, Brazil, Russia, Vietnam, Canada, Philippines, Mexico [15, 21].

The EU-28 is the second large producer and the main exporter of pork at the global level, Spain, Germany, France, Poland, Denmark, Netherlands, Italy, Belgium, Unites Kingdom, Austria and Portugal being the main producing countries [8].

Pork represents the top meat consumed in the EU, the average annual consumption being 41 kg/capita, 3.28 times higher than the global average which accounts for 12.5 kg/capita. In six EU countries: Spain, Poland, Austria, Germany, Czech Republic, and Portugal, the EU mean is exceeded [13, 26, 36].

Romania is a country with a high potential in pork production, able to cover its domestic market and to assure important amounts of pork for export as proved along the time. Pig farming and pork production are especially concentrated in the South part of Romania, but also in the Eastern and Western regions, but pigs are raised in the whole country in many households [37]. The Romanians consume in average about 38.5 kg pork per year, keeping pork on the top position among the other meat sorts: poultry meat, beef and sheep and goat meat. Pork is a traditional meat in Romania, and could be prepared in a large range of specific and tasty meals [35].

During the last 13 years, new challenges have appeared in Romania's pork sector mainly after the country access into the EU. Romania came on the top position in the EU for its huge number of pigs. Also, it has a high number of pig farms, dominated by the small sized farms, in fact households where pigs assures in general the family needs. The industrialized units are not so numerous, but their slaughtering capacity is high, so that

they have the highest share in pork production at present.

Most of farmers are facing many problems among which the key ones are: high farm inputs price, high production costs, and also the lack of subsidies which were offered just for a short period of time.

The profitability in pig fattening depends on many factors which vary from a farm to another: breeds and lines grown in the farm, number of series per year, number of sows, artificial insemination or natural mating, number of piglets per sow at birth and weaning, feeding system, daily gain, live weight at delivery, production cost, and price at the farm gate [33, 34].

The live weight at slaughter, the carcass weight and its share in the animal live weight, the quality of the carcass and of the cuts have a deep influence on meat price on the shelves of the supermarkets [30, 31, 32].

In the last years, the pork sector was deeply affected by the low number of sows to assure reproduction, the lack of piglets and their higher and higher price, resulting a higher and higher production cost, and a high price per kg live weight at the farm gate.

For this reason, meat processors proceeded to import pigs and carcasses at a low price, a fact which affected the local producers.

More than that, the outbreaks of the African Swine Fever in the Asian countries, mainly in China, and also in Europe in Romania, Poland, and other countries had and still has a deep on pork market. The EU key producing countries have intensified production and export mainly to China where pork price has exploded. In such a situation, on the EU market, it is a lack of piglets and carcasses and their price has rapidly increased.

Under this condition, Romania is facing the crisis of pork market, because the farmers have not enough biological material to develop their business, the farm input price has a high level as never before, the production cost is also high and the pig price at the farm gate is also high. The processors have not enough raw material, its acquisition from the internal is costing, and the opportunities to import carcasses are reduced

or if they exist, they are very expensive due to the boom of pork price on the EU market [27].

In this context, the paper purpose was to analyze the situation of pig livestock, pork production, consumption, import, export, trade balance, price to identify the main trends in the period 2014-2018, the last years which characterized the crisis of pork market in Romania and to look for solutions to recover of the pork sector in the coming years.

MATERIALS AND METHODS

Data collection

The paper is based on the data provided by the National Institute of Statistics, Tempo Online data base for different periods of time, mainly from 2010-2018 but also from the Food Balances 2014-2018. Also, there were used data from Faostat, and from Statista.

The studied indicators were: (i) pig livestock, (ii) pork production, (iii) pork consumption, (iv) pork trade: import, export, trade balance, (v) specific percentage ratios involving import such as: Import/Production, Import/Consumption, Import/Trade balance, Export/Import, Import dependency and Self sufficiency rate, (vi) average annual and monthly pork price at the farm gate, (vii) pork carcass price in a few member states.

Methodological aspects used in this study

The empirical data were illustrated in graphics to show the evolution of each indicator mentioned above and also was calculated the fixed basis index to reflect the percentage change in the final year compared to the first year of the chronological series.

In a few cases it was illustrated the trend line and the corresponding regression model, either a linear or a polynomial model, associated with the determination coefficient as measure of the variation in time of the studied indicator.

Other results were presented in tables whose data were also interpreted and discussed in details.

The study ends with the conclusions which emphasize the main aspects regarding the analysis of pork production in Romania in

close relationship with the decline of the pig number, the increased imports of pigs and pork, the low export, the negative trade balance, the increased consumption, the increase of average price at the farm gate and in the European market.

RESULTS AND DISCUSSIONS

Pig number decline

The number of pigs in Romania was facing a continuous decline during the last decade from 5,428 thousand heads in 2010 to 3,925 thousand heads in 2018, meaning a reduction by 27.7% in the analyzed interval. This general decreasing trend is similar with the one noticed in the EU (Fig.1).

But compared to other EU countries, a few member states like Romania, Poland, Hungary, Lithuania, Belgium, Latvia, Bulgaria, Slovakia, Slovenia, Latvia, Italy, Estonia were affected by the African Swine Fever (ASF) [6].

In Romania the ASF appeared at the end of 2017 due to the wild boars which came from Ukraine and the outbreaks were mainly in the South Eastern part, South Muntenia, and Bucharest-Ilfov. In the other micro regions of development such as: West, Center, North East and North West, the number of pigs has slightly increased.

On May 1st 2019, the pig population in Romania accounted for 3,726 thousand heads, by 403 thousand heads less than at the same date in 2018, that is a 10% loss. More than this, the sows number declined by 29 thousand heads, and reached 251 thousand heads on May 1st 2019.

Taking into account the whole period since the 1st outbreak till present, the statistics shows that Romania lost 440,000 pigs and 46,000 sows due to the ASF [10, 24].

Romania is among the EU pig growing countries, being situated on the 9th position for the number of pigs, after Spain, Germany, France, Denmark, Netherlands, Poland, Italy, Belgium, and being followed by United Kingdom. The pig population grown in Romania represents 2.64 % of the EU-28 livestock existing at the end of the year 2018

(148,191.61 thousands). Taking into account the world pig population of 781 million heads, this means that in Romania in 2018 there was raised 0.05 % of the global swine livestock [9, 41]. The pig number decline started after Romania's access into the EU. A higher and higher number of pigs was slaughtered and

could be compensated by the replacing rate which was very low, due to the non corresponding number of sows. In this way, Romania was and still is facing "the crisis of piglets" on the domestic market which led to the continuous increase of the acquisition price.

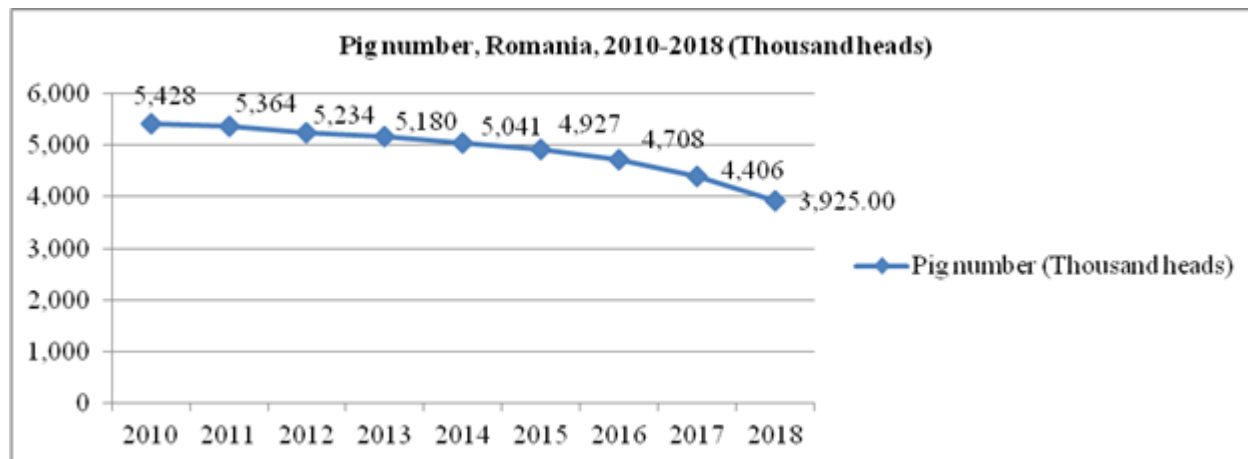


Fig.1. Pig number, Romania, 2010-2018 (Thousand heads)

Source: Own design based on data from [25].

Therefore, the pig breeders had to pay more for the farm inputs, production cost increased, while the price at the farm gate increased as well.

In addition, the fact that many Asian countries especially China, Vietnam, South Korea etc registered high losses of pigs due to the ASF, the pork demand increased and the pork price on the Asian market exploded. Under this condition, the main producing countries intensified their production and exports on the Asian market [27].

In the main EU pork producing countries like Spain, Germany and France, the sow number was maintained and the number of piglets as well for increasing the number of fattened pigs destined to the slaughter, and of course to intensify the export to China [7].

The Romanian pig farmers had no the possibility to buy piglets from other countries, the ones produced in the country were not enough to sustain pig fattening and, as a consequence, pork production decreased as well.

Therefore, the low reproduction in pig farming in Romania has led to a lack of piglets and to the increase of their price, to a lower and lower number of pigs for slaughter,

but a higher and higher price per kg live weight. More than this, the pork carcass price raised due to the high demand on the Asian market [13, 42].

Pork production

Pork production was facing important changes after Romania's access into the EU. New breeds and breeding technologies have been implemented in pig farming and led to important changes in pig farms structure and productivity level.

In 2007, the small private households played the most important role in pork production, while the industrialized specialized units were just at the beginning of their activity. The fact that most of the pigs destined to slaughter were grown in the households, the increased price of the farms inputs especially for piglets, led to a high production cost and also to a high pig acquisition price per kg live weight.

In 2007, Romania had 1.6 million pig farms, representing 57% of the EU farms. Most of the small farms in Romania raised 1-2 pigs in a traditional growing system, with a cheap housing and feed and destined to assure only the family needs. In fact pig farms structure in Romania is represented mainly by the smallest farms raising 1-10 pigs, representing

about 64% of the total number of farms, the medium farms representing 3% raising 10-400 pigs and the largest farms with a share of about 33 % growing more than 400 pigs [11, 12].

Since 2009, the subsidies for pig growing were stopped, and due to this an important number of farms failed.

Due to the high acquisition price from the pigs delivered by the households, the processors changed their tactics and passed to cheap imports to assure the raw material and in this way, the importance of the households in the pork sector was diminished. As a result, in 2012, the industrialized and specialized units slaughtered 64.7% of the number of slaughtered pigs and produced 63.6% of pork production.

Since 2014, pig sector was affected by the trading embargo imposed to Russia by the

EU, which led to a high amount of pork imports at low prices, which affected the local producers.

Pork production increased having a positive impact on the domestic market, but also encouraging the exporters to sell on external markets. However, the restraints imposed due to the appearance of the classical Swine Fever (SF) in the Romanian farms in the period 2007-2016 affected exports. After 2016, Romania was free of SF and the pork exports recovered [2, 14].

The dynamics of pork production was determined by the situation of the number of slaughtered pigs, average their live weight at slaughter, and the carcass weight. Pork production accounted for 426,100 Tons (equivalent fresh pork carcass) in the year 2018, being by 3.35 % higher than in 2014, when it was 412,272 Tons (Fig.2).

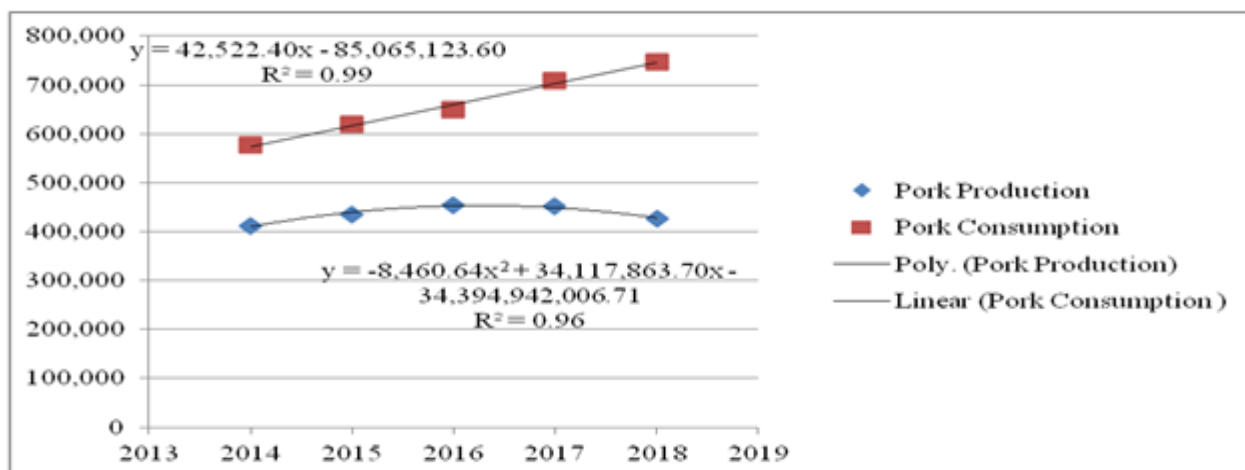


Fig.2. Pork production and pork consumption trend, Romania, 2014-2018
 Source: Own design based on the data from [25].

In 2018, the highest number of pigs and the best pork production were carried out in

industrialized and specialized units as presented in Table 1.

Table 1. Pork production achieved in industrialized and specialized units in the period 2011-2018

	No. of slaughtered pigs (Thousand)	Pig live weight at slaughter (Thousand Tons)	Average pig live weight at slaughter (kg/head)	Pork carcass weight (Thousand Tons)	Carcass share in live weight (%)
2011*	3,256.8	344.6	105.7	263.3	76.4
2012*	3,481.5	368.0	105.7	282.2	76.7
2013**	3,757.0	400.2	106.5	308.4	77.0
2014**	3,980.4	421.3	105.8	324.9	77.1
2015***	4,037.8	428.2	106.1	330.4	77.2
2016****	4,033.5	436.0	108.1	337.0	77.3
2017*****	3,882.0	423.4	109.1	328.0	77.5
2018*****	4,265.4	470.1	110.4	365.1	77.5

Source: [18, 19, 20, 21, 22, 23].

Romania's contribution to the EU pork production is very small and accounted for 1.52% in 2018. At the world level, the contribution of Romania is much lower representing just 0.97% of the global pork output of 43,505.23 Thousand tons in 2018.

Pork consumption

Pork is a traditional and popular meat in Romania, which is reflected in the top position occupied by pork among other sorts of meat. The evolution of pork consumption compared to pork production may be observed in Fig.2, where it is clear that while pork consumption is increasing, pork production is declining. This means that the increased consumption is based not only on the domestic production but also on imports to cover the internal market needs. Consumption reached 38.3 kg/capita in 2018, being by 15% higher than in 2010. However, during the last decade, it varied, decreasing from the year 2010 to 29 kg/capita in 2014, the lowest level,

but after this year it restarted to grow continuously till present [38]. (Fig.3)

On the following positions in the consumers' preferences decreasing order there are: poultry meat with 26.9 kg/capita, beef and veal with 5.2 kg/capita and sheep and goat with 2.2 kg/capita in the year 2018. An increased competition could be noticed among pork and poultry meat during the last decade when the population has become more conscious of the importance of a healthy diet. For this reason, poultry meat comes on the second position being more and more agreed by the ones who prefer to consume a lean meat, with a high value protein and low cholesterol content (Fig.3).

Therefore, pork represents more than a half, more exactly 51.8% of the total annual meat consumption per capita in Romania, which accounted for 73.8 kg/capita in 2018. Since 2016, pork consumption in Romania exceeded the average pork consumption in the EU [14].

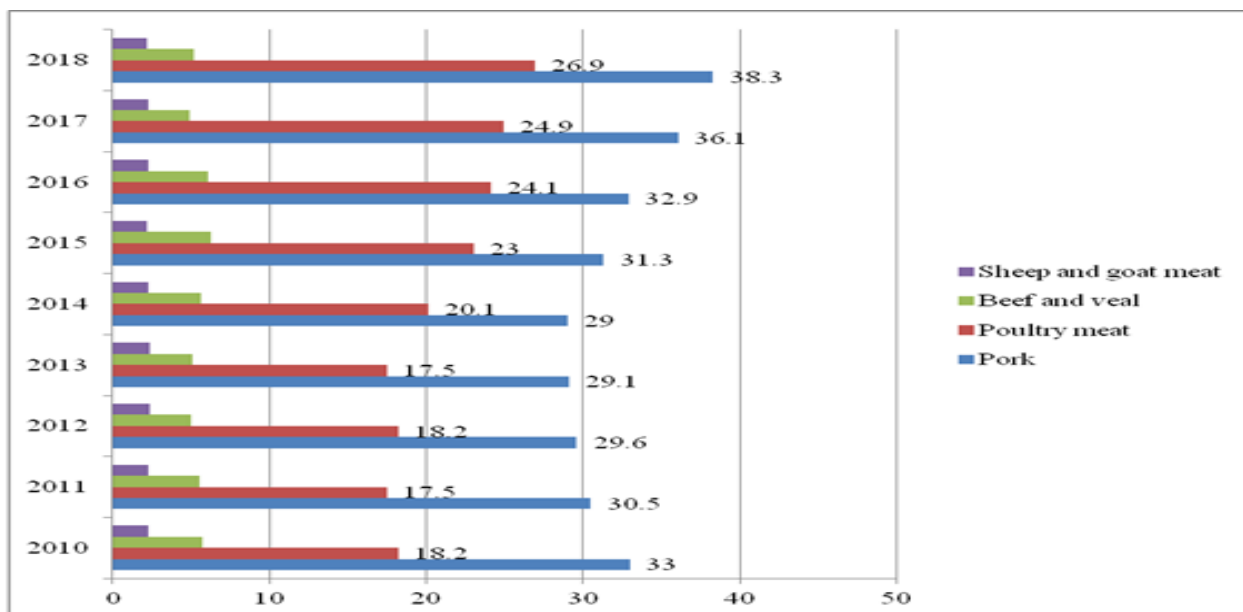


Fig.3. Pork consumption compared to other meat sorts, Romania, 2010-2018 (kg/capita)

Source: Own design based on the data from [17].

The evolution of pork consumption compared to meat consumption in Romania is presented in Table 2.

Table 2. Pork consumption compared to meat consumption in Romania, 2010-2018 (kg/capita)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2018/2010 %
Pork	33.3	30.5	29.6	29.1	29.0	31.3	32.9	36.1	38.3	115.01
Meat	59.9	56.0	55.3	54.4	57.8	63.4	65.5	68.4	73.8	123.20
Share of pork (%)	55.6	54.5	53.5	53.5	50.2	49.4	50.2	52.8	51.9	93.34

Source: Own calculation based on the data from [17].

The data reflect that despite that pork consumption increased in the period 2010-2018, its share in total meat consumption is still the highest, but it registered a slight decreasing trend from 55.6% in 2010 to 51.9% in 2018.

Compared to the EU-28 average pork consumption, Romania came on the 9th position in the year 2016, after Spain, Poland, Austria, Germany, Czechia, Portugal, Italy and Netherlands (Fig. 4).

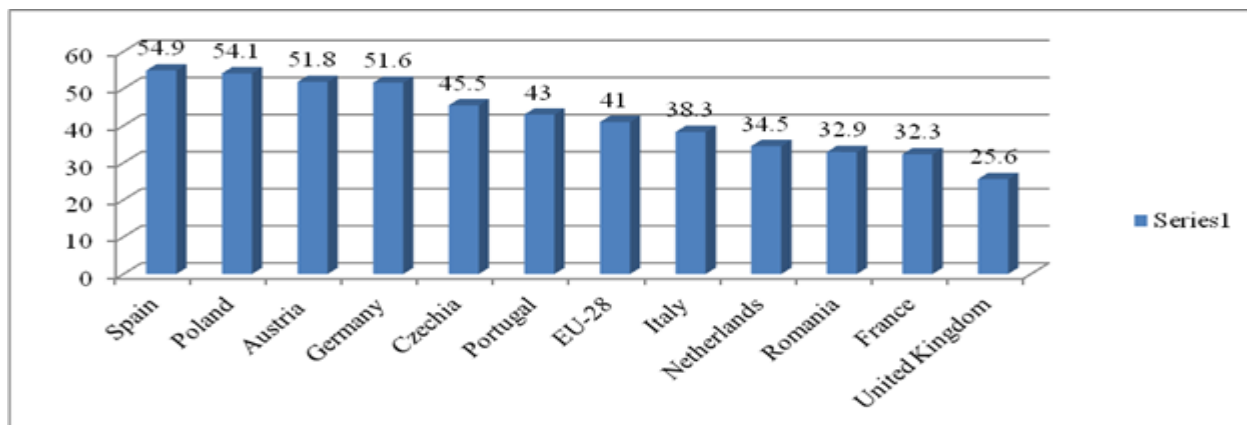


Fig.4. Pork consumption in Romania compared to the EU-28 average and the average consumption in the top European countries (kg/capita)

Source: Own design based on the data from [4].

Pork trade

Pork trade has been continuously developing in Romania because of the variation in the internal demand/offer ratio, the pork production being nonsufficient to cover the market requirements which explains why Romania, a country with a high pork production potential, has become a net importing country. Also, pork export is justified by the high demand and the higher and higher pork price in the international market, a good opportunity for exporting companies to increase their profit.

After the access into the EU, Romania has become more and more dependent on imports, at the beginning of live pigs and then of pork carcasses and meat at low prices.

Therefore, the quantities of imported pork increased year by year, in 2018 reaching 361,154 Tons by 73.28% more than in 2014. At the same time, the pork export was represented by small quantities which increased from 33,894 Tons in 2014 to 34,144 Tons in 2018, that is by +0.73%, the highest exported amount, 39,349 Tons being noticed in the year 2016 (Fig.5).

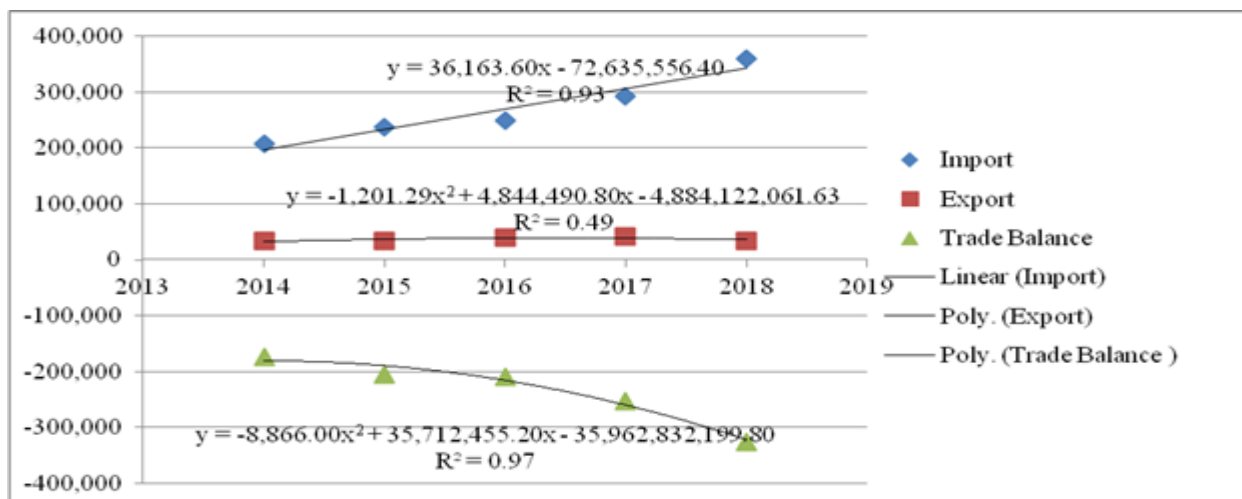


Fig.5. Pork import, export and trade balance, 2014-2018 (Equivalent fresh meat in carcass, Tons)

Source: Own design based on the data from [17].

The imports of pigs and pork were determined by processors who did not agree to assure the raw material from the internal market of pigs fattened in the small farms, due to the high production cost and high price at the farm gate.

The embargo imposed to Russia since 2014 by the EU has brought additional damages to the local producers, because of the invasion of pork at a low price coming from the other EU member states such as Netherlands, Hungary, Germany and Spain on the Romanian market [11]. Also, in the period 2007-2016, pork exports of Romania were very small because of the Swine Fever, the recovery of export was noticed only after the official recognition that Romania is a free-SF country [2, 3, 14].

As a result, the pork trade balance was negative after 2007 increasing year by year, due to the high growth rate of imports and low growth rate of exports. In 2018, Romania had a pork trade balance accounting for -327,010 Tons, by 87.3 % higher than in 2014 (Fig. 5). The value of pork import, export and trade balance is presented in Table 3.

The data from this table show that the import value of pork is double in 2018 versus 2014 and accounted for Euro 518 Million.

The export value declined by 24.16 % from Euro 38.5 Million in 2014 to Euro 29.2 Million in 2018. As a consequence, the trade balance is negative in all the analyzed years, increasing 2.22 times in 2018 compared to the level of 2014.

Table 3. Dynamics of the value pork import, export and trade balance, Romania, 2014-2018 (Million Euros)

	2012	2013	2014	2015	2016	2017	2018	2018/2012 %
Import value	257.9	269.3	284.7	295.5	343.6	479.7	518.0	200.85
Export value	38.5	42.3	51.8	38.7	54.3	55.1	29.2	75.84
Trade balance	-219.4	-227.0	-232.9	-256.8	-289.3	-424.6	-488.8	222.78

Source: Own calculation based on the data from [39, 40].

Descriptive statistics for pork production, consumption, import, export, and trade

balance is presented in Table 4.

Table 4. Descriptive statistics for pork production, consumption, import, export, and trade balance

	Mean	St. Dev	Min.	Max.	Coeff. of variation (%)
Pork production	435,795.2	17,777	412,272	454,589	4.07
Pork import	270,261.2	59,391.3	208,417	361,154	21.97
Pork export	36,316.6	3,798.4	32,814	41,382	10.45
Pork trade balance	-233,845	58,985.5	-327,010	-174,523	25.21
Pork consumption	660,034.8	67,553.61	577,922	746,467	10.23

Source: Own calculation.

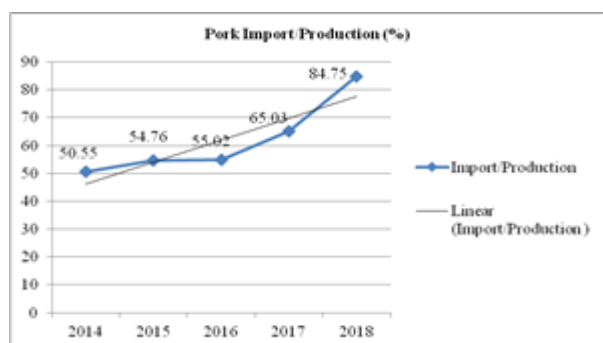


Fig.6. The dynamics of pork Import/Production ratio, Romania, 2014-2018 (%)

Source: Own design and calculation.

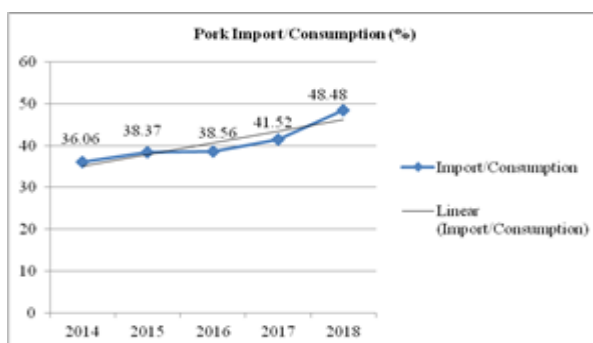


Fig.7. The dynamics of pork Import/Consumption ratio, Romania, 2014-2018 (%)

Source: Own design and calculation.

Important ratios reflecting the economic impact of the increased import

(i)**Import/Production** reflects in what measure import accounts in production. In case of pork, this ratio has continuously increased from 50.55% in 2014 to 84.75% in 2018 (Fig.6).

(ii)**Import/Consumption** shows what percentage of the consumed amount of pork comes from import. This ratio has also a continuous increasing trend from 36.06% in 2014 to 48.38% in 2018 (Fig.7).

(iii)**Import/Trade balance** reflects the influence of import on the negative trade balance as shown in Fig.8.

(iv)**Export/Import ratio** reflects the efficiency of Romania's pork trade. Unfortunately, the level of this ratio is very small, because imported quantities are much higher than the exported ones. If in 2014, the level of this ratio was 16%, in 2018 it reached the lowest figure, 9 % (Fig.9).

(v)**Import dependency** shows in what measures import covers the available pork amount existing on the domestic market after adding production with import and subtracting export. The level of this indicator increased from 35.51% in 2014 to 47.95% in 2018 (Fig.10).

(vi)**Self sufficiency rate (SSR)** shows that pork production carried out in Romania is not enough to cover consumers' needs and claims to satisfy the demand by additional amounts by import. The level of Self sufficiency rate declined from 70.25% in 2014 to 56.57% in 2018 (Fig.11).

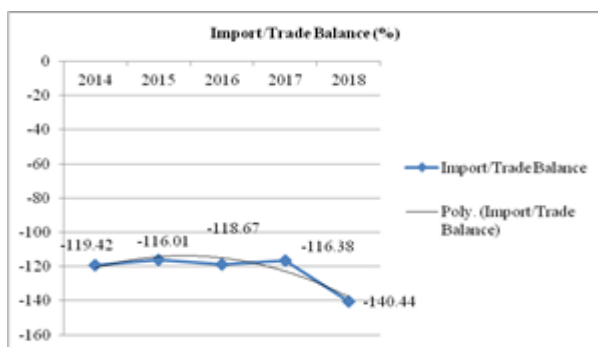


Fig.8.The dynamics of pork Import/Trade balance, Romania, 2014-2018 (%)
 Source: Own design and calculation.

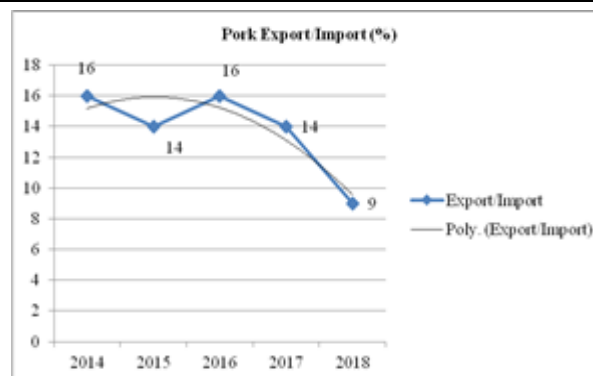


Fig.9.The dynamics of pork Export/Import ratio, Romania, 2014-2018 (%)

Source: Own design and calculation.

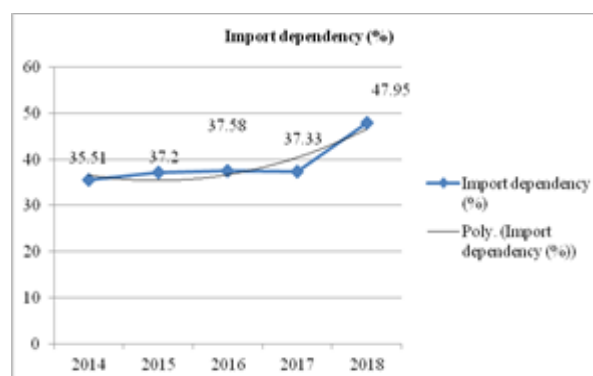


Fig.10.The dynamics of pork Import dependency, Romania, 2014-2018 (%)

Source: Own design and calculation.

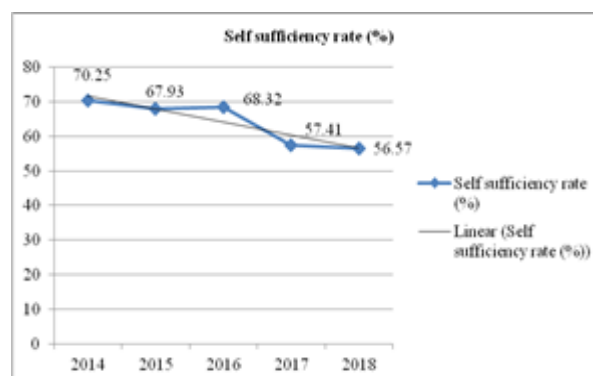


Fig.11.The dynamics of pork self-sufficiency rate, Romania, 2014-2018 (%)

Source: Own design and calculation.

In 2016, pork self sufficiency rate in Romania was 68.32%, much lower than the EU-28 average SSR, 114%.

However, in that year, Romania came on the 9th position in the EU-28 from this point of view, after Netherlands, Ireland, Spain, Germany, Austria, France, Poland, and Portugal (Fig.12).

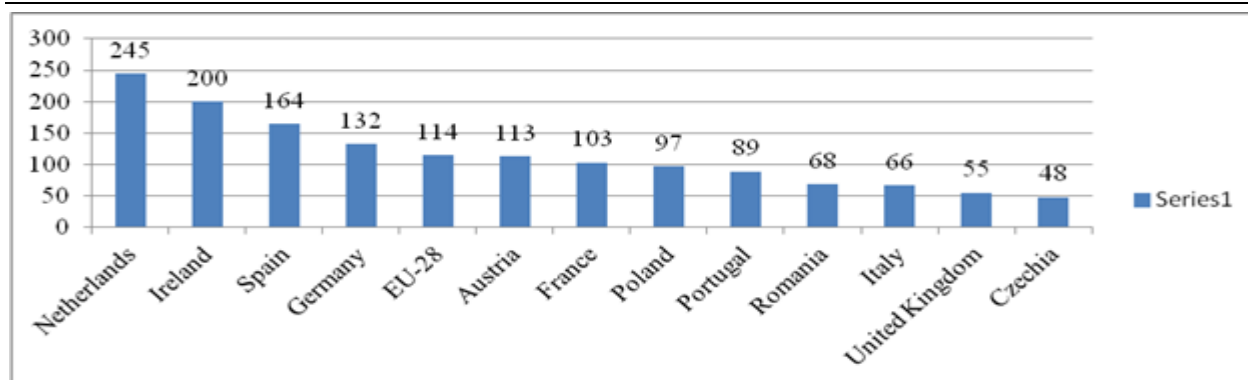


Fig.12. The dynamics of pork self-sufficiency rate in Romania compared with the EU-28 average and the SSR in the top consuming countries, 2014-2018 (%)

Source: Own design based on the data from [5].

Average acquisition price per kg live weight at the farm gate

In the period 2010-2019, the average annual acquisition price per kg live weight at the farm gate increased by 25.76 %, from Lei 4.93 in 2010 to Lei 6.2 in 2019 (Fig.13). The effects of the African Swine Fever, which diminished the pig livestock by about 440,000 pigs and 46,000 sows, increased the

production cost, could be also seen in the increase of the price at the farm gate per pig at the acquisition. In the year 2019, mainly starting from the month of April.

The average month price started to grow from Lei 5.61 per kg live weight and continued month by month till the maximum level in December, when it accounted for Lei 8 per kg live weight (Fig. 14).

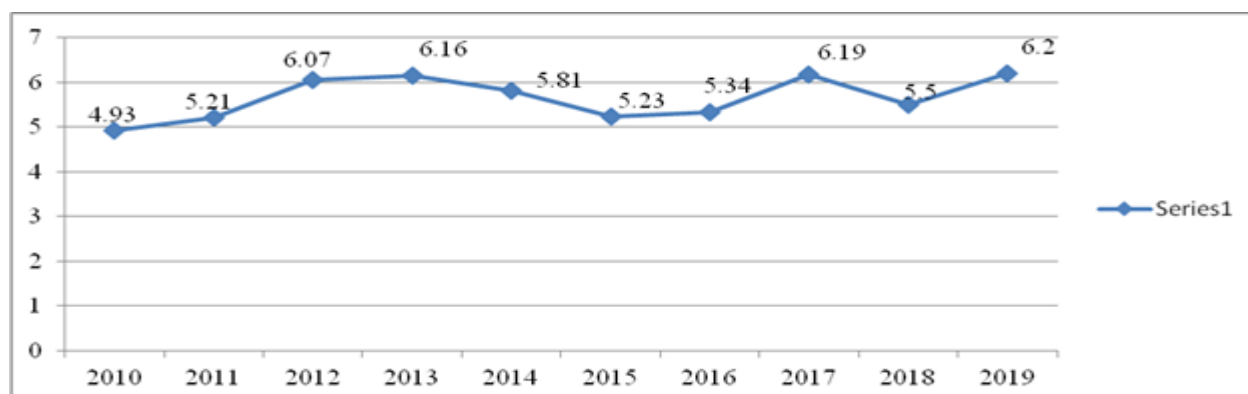


Fig.13. Pork average annual acquisition price per kilogram live weight at the farm gate (Producer's price- Lei/kg)

Source: Own design based on the data from [25].

Analyzing the monthly price in the two years, we may easily notice that at the beginning of the year 2019, in the first months, the average acquisition price was lower than in the same months of the year 2018. But, starting from May 2019, the average monthly price increased by +8.5% in May, + 11.4% in June, +13.9% in July, +16% in August, +26.2% in September, +30.6 % in October, + 33% in November and +47.6% in December.

Therefore, the pork crisis in the international market in terms of the price boom and intensified export was caused by ASF in China, South Korea, Vietnam, Mongolia

which absorb a high amount of pork to cover the internal market requirements. Since April 2019, pork carcass price increased month by month and even from a week to another, and it continued to be a lack of pork supply in the international market. This was caused by the Asian traders who pay the pork amounts in advance for the months of August-September and bids higher prices up to 20% for live animals weighing 80-110 kg.

In the 30th week of the year 2019, the price per pig E class carcass in Romania and other EU countries looked as presented in Table 5.

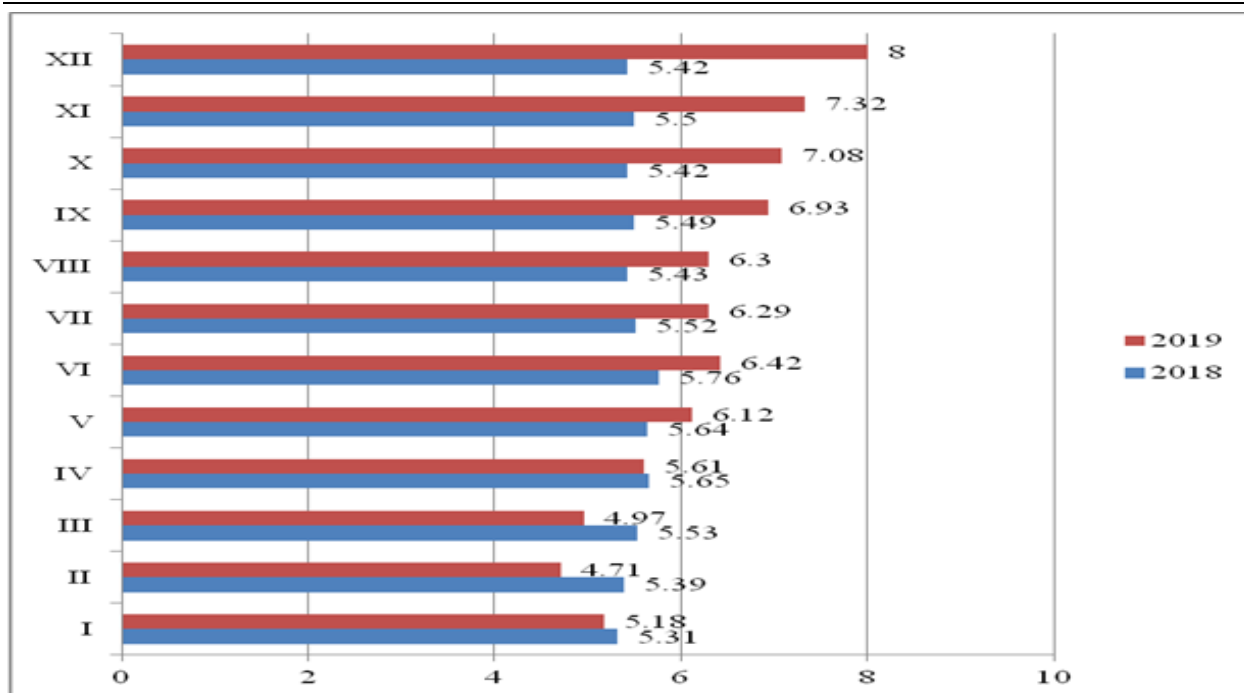


Fig.14. Pork average monthly acquisition price at farm gate per kg live weight in the year 2019 compared to 2018 (Lei/kg)

Source: Own design based on the data from [25].

Table 5. Average pork E class carcass price in Romania versus other EU countries (Euro/carcass)

EU-28	Romania	Spain	Germany	Poland	France
173.01	190.62	181.39	179.17	167.57	166.00
RO vs EU-28 17.69Euro 10.2%	-	RO vs ES 9.23Euro 5.1%	RO vs DE 11.45Euro 6.44%	RO vs PL 23.08Euro 13.8%	RO vs FR 24.62Euro 14.8%

Source: [28].

For taking the advantage of this situation the Dutch farmers do not sell piglets and pork carcasses any more intra-EU, only in small amounts. For this reason, the price on the European market increased by 15% for live animals and by 18% for cold carcass even from April 2019. Under this situation, it is expected as pork crisis to continue, and on the EU market poultry meat to grow and to exceed pork production in 2020 and in the coming years [28]. Therefore, the Romanian producers are under the pressure of the lack of piglets and fattened pigs to deliver to the processing industry, and the processors are under the pressure of the lack of raw material and the imports at high price.

CONCLUSIONS

The analyzed aspects in this paper pointed out that the pork market crisis has deeply affected pork production and trade.

Pork production was firstly affected by the reduction of pig livestock, on one side, in the farms which failed because they could not resist to the market pressure, and on the other side due to the African Swine Fever which obliged the authorities to diminish the pig livestock with about 486,000 heads, of which about 10% sows. At the end of 2018, Romania had 3,925 thousand pigs, by 27.7% less than in 2010, and in May 2019, it had 3,726 thousand heads. However, in 2018, pork production reached 426,100 Tons (equivalent fresh pork carcass) registering a slight increase by 3.35 % compared to 2014. It could be considered that it has relatively stagnated at the same level due to the reduction of the number of pigs, but also it was sustained by the import of pigs and carcasses in the processing industry.

Pork consumption increased reaching 38.3 kg/capita in 2018, a record by 15% higher than in 2010 when a Romanian consumed 33

kg pork. However, the statistics shows that pork consumption is in competition with poultry meat, whose consumption has grown much faster by 47.8% so that in 2018 it reached 26.9kg/capita compared to 18.2 kg/capita in 2010. Pork consumption in Romania is below the EU average, which accounts for 41 kg/capita and far away of 54.9 kg/capita consumed in Spain which is on the top. Romania's pork trade is dominated by imports, which resulted in a negative trade balance that it is expected to continue in the coming years. In 2018, Romania imported 361,154 Tons pork by 72% more than in 2014, and exported 34,144 Tons by 3% more than in 2014. Therefore, in 2018, the trade balance accounted for -327,010 Tons, the deficit being by 87.3 % higher than in 2014.

The imports had a negative impact in the economy if we take into account the level of the main import ratios. In 2018, import represented 85% of pork production, 48.3 % of pork consumption, import dependency being 48%, and self sufficiency rate 56.5%. All these ratios have a higher level than in 2014. Also, the ratio export/import registered the lowest level as never before, just 9%. All these reflects that consumption is assured mainly from import and in a small proportion by the internal production. Taking into account the values of import and export, in 2018, Romania registered Euro - 488.8 Million trade balance, 2.22 times higher than in 2012. The ratio export value/import value being 5.7 % compared to 9% in case of the ratio based on the exported and imported pork quantities. This means that the import price is higher than the export price, and obviously, this reflects the inefficiency of Romania's pork trade.

The average acquisition price at the farm gate increased by about 25% in the period 2010-2018, accounting for Lei 6.2 per kg live weight in 2018. As a consequence of the outbreak of the African Swine Fever, from April 2019, the farm gate price increased from Lei 5.61 to Lei 8 in the month of December, that is by 42.6%, and this was reflected in the consumer's price as well.

Therefore, Romania's pork sector is in a very difficult situation at present and the pork market crisis is expecting to continue.

Among the measures which could diminish the negative effects of this crisis, caused by the African Swine Fever, there are recommended the following ones:

- severe sanitary and veterinary measures has to be taken by the National Sanitary and Veterinary Authority and for Food Security (ANSVSA) to prevent the extend of the African Swine Fever to other farms, in this way to stop the decline of pig number and sows;

- pig raising in the individual households must be stopped, because in their case the regulation of bio-security are not entirely respected, and pig farming and processing has to continue only in industrialized units where the hygiene, sanitary and veterinary conditions could be much better assured;

- severe measures and tools have to be taken by the public authorities for the neutralization of the ill animals and the destroy of the dead animals;

- the compliance of the regulations regarding animal transportation;

- severe controls and disinfection measures of the trucks transporting animals;

- state intervention in the limitation of the pork imports to keep the pork price under control in the internal market;

- interdiction of pig raising in free spaces (forests, pastures etc), out of the household or farm;

- interdiction of the organization of animal fairs on Romania's territory;

- interdiction of trade, transportation and slaughter of the animals which are not sanitary and veterinary authorized;

- interdiction of slaughter of the animals raised in non professional units without traceability;

- severe control measures at the frontiers for not allowing the import of contaminated meat products;

- important measures have to be taken by pig breeders to assure good conditions for the sow livestock: hygienic housing, high quality feed, artificial insemination in order to obtain a corresponding number of piglets per sow;

-assurance of good raising conditions for sows having piglets so that the losses till the weaning to be at minimum level: corresponding temperature, hygiene, feeding and watering in the sheds and boxes;

-the strict application of the modern technologies in pig fattening for assuring a high daily gain, and a corresponding live weight at slaughter with a reasonable production cost;

-the small pig breeders with less than 5 pigs have to respect the new regulations issued by ANSVSA in 2019 regarding the interdiction to feed the pigs with food scraps from the kitchen, to keep reproduction animals and unsterilized boars; the breeders have to apply the strict hygiene rules in the sheds, boxes, and of the farmer and before slaughter, the pigs have to be sanitary and veterinary controlled and the meat will be used only for the family consumption;

-animals destined to reproduction and fattening to be raised and slaughtered only in specialized units;

- measures to improve pork carcass quality, in close relationship with the breed, lines used for fattening, and live weight at slaughter;

- intensification of Romanian pork promotion on the external markets for intensifying export;

- assuring the highest quality of the pork destined to be exported in order to get a better price.

Therefore, both the breeders and processors have to join their efforts to continue the development of the pork sector in Romania and assure its profitability and competitiveness.

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