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HOW DID THE RISE IN FERTILISER USAGE IMPACT ROMANIAN TRADE IN THIS PRODUCT?

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Abstract

The paper aimed to analyse how the increase in the fertiliser usage in Romania in the last years, 2010-2022, made change in the imports value of these products. For this purpose, it was analysed first the recent evolution of fertiliser usage in Romanian agriculture, and then the impact on imports, using data provided by the European Commission and the International Trade Centre. The results of the quantitative analyse indicated that Romania is highly dependent of external markets in order to cover its internal needs for the usage of these products in agriculture. Both usage of natural and chemical fertilisers increased in the analysed period, and the poor internal production conducted to a very high annual growth rate of the imports.

Key words: *fertiliser usage, trade, Romania, European Union*

INTRODUCTION

The fertilisers play a role key in increasing agriculture productivity. Many studies were focused on determining the optimal level of fertilisers that can be used, by applying modelling computing corelated with the EU strategies in this field [3]. While some authors were focused on the doses of fertilisers that should be applied [4] others are dedicated to the effect of some types of fertilisers [12] as foliar, which brought improved yields for specific crops [2]. The necessity to know if some fertilisers have negative effects [11] conducted to complex studies that reveals different effects on soil and water. Relative with the economic impact of using fertilisers, have to be mentioned some studies that analyse the farmers reaction on fertilisers price changes [1] or the effect of fertilisers increased prices on European farmers [9]. The subject of trade with fertilisers was approached in relation with its impact on EU dependence in some key fertilisers as phosphorous [10], or in relation with the main players that controlled the world trade with fertilisers [6]. In this paper it was underlined the evolution of the Romanian demand for fertilisers in agriculture and the impact of the increased usage of fertilisers on Romanian trade in this product.

MATERIALS AND METHODS

The data provided by Romanian National Institute of Statistics were used to determine the evolution of Romanian production of different type of fertilisers, by applying statistic indicators. Both statistic and trade indicators were used in evaluating the Romanian trade with fertilisers, following the data provided by International Trade Centre. The data provided by the European Commission, through FADN Public Database were used in the comparative analyse of the average fertiliser usage at the EU and Romanian farm level.

RESULTS AND DISCUSSIONS

Romania used in 1990 over 25.8 million to of chemical and natural fertilisers, from which most part were natural fertilisers: over 24,7 million to of active substance. From 1990 to 2008 the usage of fertilisers dramatically decreased to only 13.7 million to of active substance, from which over 13.2 million to were natural fertilisers. Then the degree of usage increased again, to over 18.9 million to

of active substance in 2022, from which 18.2 million to, represented natural fertilisers (Fig 1).

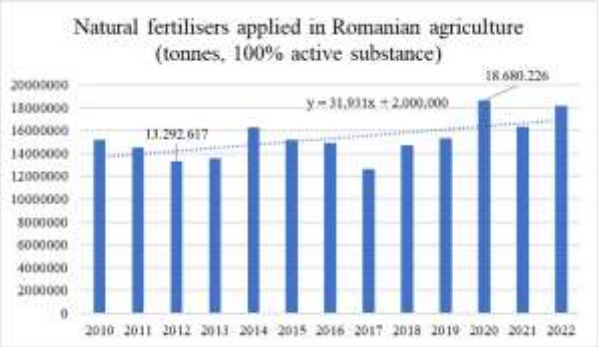

Fig. 1. Evolution of natural fertilisers applied in Romanian agricultrure between 2010 and 2022
Source: National Institute of Statistic [7].

The applied chemical fertilisers decreased from 1,1 million to of active substance in 1990 to 326 thousand to in 2002. Then the usage of chemical fertilisers started to increase yearly, up to 844 thousand to in 2022 (Fig 2).

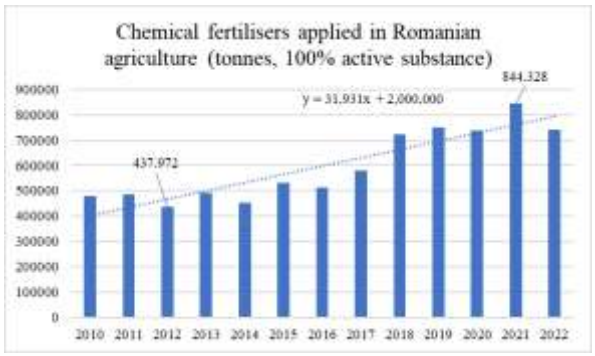

Fig. 2. Evolution of chemical fertilisers applied in Romanian agricultrure between 2010 and 2022
Source: National Institute of Statistic [7].

From the chemicals fertilisers most part of usage during this period were represented by Nitrogenous, followed by Phosphatic and Potassic (Fig 3). In 2012 from the total usage of 437 thousand to of chemical fertilisers, 66.21% were represented by nitrogenous, and 25.81% by phosphatic, both recording the highest, respectively the lowest percent of usage from the entire period 2010-2022. In 2021 the usage of nitrogenous was only 60.5% from the entire chemical fertilisers, while phosphatic was 28.1%, that represented the lowest, respective the highest percent of usage for each from the entire period (Fig 3). The usage of Potassic varied between 2010 and 2022 from a minim of 6.66 % in 2014 to a maxim percent of 12.31 % in 2019.

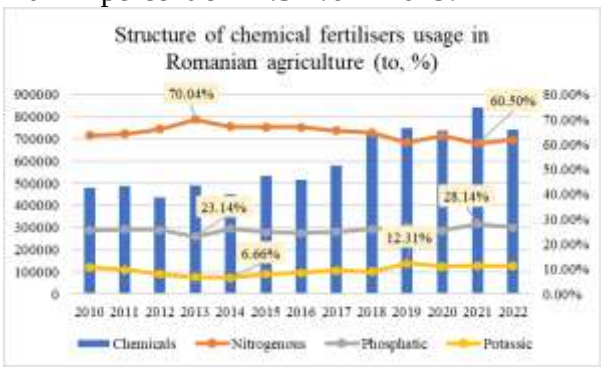

Fig. 3. Structure of chemical fertilizers applied in Romanian agricultrure between 2010 and 2022
Source: National Institute of Statistic [7].

In the crops production, at the EU level the cost of fertilisers per crop farm increased from 10.2 hundred Euro in 2019 to 15.7 hundred Euro in 2022. The fertilisers represented an important part of the total inputs cost at EU level, which also increased from 71.9 hundred Euro in 2019 to 79.5 hundred Euro in 2022 (Table 1).
In the same period of time in Romania, the cost of fertilisers per crop farm increased from 8.1 hundred Euro in 2019 to 14.7 hundred Euro in 2022 (Table 2), while the total inputs cost increased from 55.6 hundred Euro in 2019 to 71.5 hundred Euro in 2022. The cost increase can be associated both with the increase of the fertiliser quantity usage per ha and the increase of the cost of purchasing fertilizers by farmers.

Table 1. The average cost of inputs by farm in EU and particularly in Romania

Year	Average cost of inputs by farm in EU (Euro)	Average cost of inputs by farm in Romania (Euro)
2019	71,936	55,646
2020	70,823	53,203
2021	68,173	57,901
2022	79,513	71,573

Source: FADN Public Database [5].

In Romania professional press released that [13] from 11 producers of fertilisers that had a combined production of 2.5 million to of chemical fertilisers, three decades ago, only two are still active on the market, but produce expensive fertilisers due to significant increase in the recent years in the price of natural gas.

Table 2. The average cost of fertilisers by farm in EU and particularly in Romania

Year	Average cost of fertilisers by farm in EU (Euro)	Average cost of fertilisers by farm in Romania (Euro)
2019	10,217	8,106
2020	9,943	7,823
2021	10,274	9,482
2022	15,763	14,772

Source: FADN Public Database [5].

Most part of the imports of fertilisers that get in Romania, arrived from countries that are geographically close to Romania as Bulgaria and Russian Federation. The price of the fertilisers that come from these countries are attractive for Romania market. Since the consume of methane gas is high in the producing of fertilisers, Russian Federation has a big advantage due its huge resources of methane gas which allow her to produce fertiliser at very low prices. We can notice that Romania imported most part of its fertilisers from countries that are not part of the EU. The annual growth rate of 43% between 2018 and 2022 of the imports of fertilisers in Romania (Table 3) is a result of increased demand of fertilisers on the internal market, combined with a poor offer provided by Romanian producers of fertilisers. Romania is a net importer of fertilisers and only a small part of its internal production go the neighbour countries. While Bulgaria is the main exporter of fertilisers in Romania, Hungary is the main importer. Even in the case of exports, Romania recorded a positive annual growth rate of 16.37% for the period 2018-2022.

Table 3 Top exporters of fertilisers in Romania (thousand Euro)

No. crt	Exporters	2018	2019	2020	2021	2022	Average	St. Dev.	Coef. of variation (%)	Annual growth rate (%)	2022/2018 (%)
	World	484,897	610,013	490,588	906,585	2,050,864	908,589	591,301	0.65	43.41	422.95
1.	Bulgaria	102,393	126,856	87,478	129,898	264,617	142,248	63,169	0.44	26.79	258.43
2.	Russian Federation	47,252	84,049	49,592	84,314	246,840	102,409	73,969	0.72	51.18	522.39
3.	Türkiye	14,772	7,751	10,988	48,665	204,226	57,280	74,927	1.31	92.83	1,382.52
4.	Egypt	18,946	25,321	14,930	63,977	187,431	62,121	65,041	1.05	77.35	989.29
5.	Georgia	6,045	10,451	12,234	54,163	183,745	53,328	67,486	1.27	134.80	3,039.62

Source: own calculation based on INTRACEN data base [8].

Table 4. Top importers of fertilisers from Romania (thousand Euro)

No. crt	Exporters	2018	2019	2020	2021	2022	Average	St. Dev.	Coef. of variation (%)	Annual growth rate (%)	Evolution 2022/2018 (%)
	World	124,809	141,637	168,485	148,819	228,861	162,522	36,007	0.22	16.37	183.37
1.	Hungary	29,623	38,797	30,329	37,577	97,717	46,809	25,722	0.55	34.77	329.87
2.	Bulgaria	15,762	27,450	17,988	35,311	48,116	28,925	11,867	0.41	32.18	305.27
3.	Republic of Moldova	4,614	5,732	5,777	9,480	19,375	8,996	5,444	0.61	43.15	419.92
4.	Croatia	496	7,869	1,546	3,560	14,782	5,651	5,217	0.92	133.65	2,980.24
5.	Ukraine	3,691	11,546	6,052	5,076	13,124	7,898	3,733	0.47	37.32	355.57

Source: own calculation based on INTRACEN data base [8]

While Georgia started to be an important exporter of fertilisers on Romanian market, with an annual growth rate of 134.8%, in the case of the exports the small exported quantities cannot lead to significant conclusions, excepting the idea that Romanian exports are focused to neighbour countries. Türkiye, with an annual growth rate of export of fertilisers in Romania of 92.83% for the period 2018-2022 and Egypt with an annual growth rate of export of fertilisers in Romania of 77.35% can increase their share of exports

of fertilisers on Romanian market in the next years, since the imports from the Russian Federation are banned now in the EU and not too many other options are available for Romania, due to high delivery freight cost from countries situated at long distances from our country.

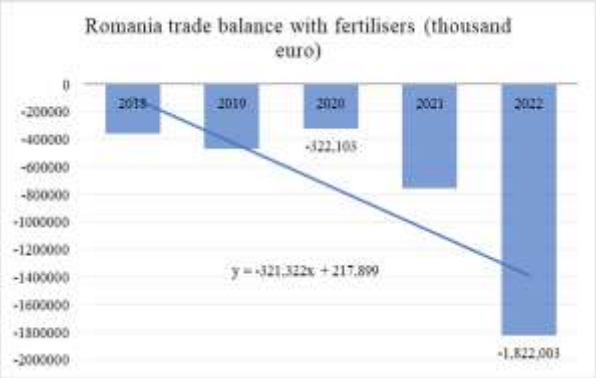

Fig. 4. Romania trade balance with fertilisers (thousand euro)
Source: INTRACEN data base [8]

The deficit of the Romanian trade balance for the fertilisers increased between 2018 and 2022 from a minim of 322,103 Euro deficit in 2020 to a record of 1,822,003 Euro deficit in 2022 (Figure 4).

CONCLUSIONS

Romania has an internal usage of fertilisers that cannot be cover in the next years by the internal production. The constantly increase of fertilisers imports conducted to a high deficit of Romanian trade balance with these products. The usage of fertilisers in Romania increased within the analysed period, and the necessity of finding replacement of the imports from the Russian Federation will be high in the next years. The internal production is affected by the cost of methane gas, and has few options to recover in the next period of time. The replacement of chemical fertilisers with natural fertilisers can be a solution, but should be correlated with the existing situation in the animal sector, which is not also very favourable. Romania is obliged to increase its imports of fertilisers from countries that are not part of the EU, and the customs duties should be analysed, and negotiated at the EU level, since Romania is not the only affect country by the existing tensions on the World fertiliser market.

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