Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development
Vol. 18, Issue 3, 2018
PRINT ISSN 284-7995, E-ISSN 2285-3952

CONSIDERATIONS CONCERNING WORLDWIDE PRODUCTION AND MARKETING OF SUNFLOWER SEEDS

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Abstract

In this paper are presented the main trends manifested in the world with reference to the production and marketing of sunflower seeds, during 2012-2016. Worldwide, sunflower culture is an important culture because it has a number of uses, such as: human food; for animal feed; for industry and energy; and other related uses. In this study we have presented and analyzed a series of indicators related to the production and marketing of sunflower seeds worldwide. Among the studied indicators were noted: areas planted with sunflower worldwide; overall rate of production of sunflower seed; the total amount of fertilizer used for the production of sunflower; average yield per hectare for sunflower seeds; human sunflower consumption; imports and world exports of sunflower seeds. In the future, it is expected both an increase in the area planted with sunflower and an increase in sunflower seed production. The main statistical data that was used in the paper was taken from specialized international sites.

Key words**:** *sunflower seeds; worldwide production of sunflower seeds; consumption; imports and exports*

INTRODUCTION

Currently, at a global level, oil plants are highly valued by farmers because the products resulting from their processing are demanded and used in several sectors of activity. Oil plants are plants that have a high degree of fat in seeds, which contribute to obtaining oil with special characteristics [1,9].
There is a worldwide increase in the production of oilseeds, which directly contributes to increased attractiveness for oilseed crops [10].
It is necessary to recall that the increase of the oilseed areas has been determined to a relatively large extent by a representative aspect, such as the use of oil crops for the production of biofuels because they represent significant substitutes for gasoline and diesel [8].
Sunflower (Helianthus annuus L.) is part of the oil plant category. The sunflower fruit (achenele) contains 50% oil, which on the one hand is highlighted by remarkable food properties and, on the other hand, a high degree of conservatism. Sunflower is currently used in several areas such as: the food sector; livestock sector; energy etc, [15].
Sunflower culture is mainly used to obtain alimentary oil. The oil obtained is a good quality oil used in the population feeding. It is also necessary to recall that phosphatides result from the oil extraction process and they are very important because of their usage on a large scale in the food industry [6].
Sunflower culture originates in Central and North America and is found throughout the globe [16].
Worldwide, sunflower culture is remarkable because it occupies significant areas, being considered a culture that contributes directly to providing food for both humans and animals. Another significant aspect for sunflower crops is represented by the high productivity, which leads to the permanently growth of the cultivated areas. On the globe, sunflower crops are ranked fourth after corn; wheat and rice [7].
Sunflower culture is an attractive crop for farmers because it has a number of advantages that directly contribute to increasing the achieved financial results. Among the advantages of this culture we mention:
-Lower costs per area unit compared to other crops;

-It is totally mechanized and does not raise problems for the farmer;
-Sunflower is an oil plant which capitalizes the terrain with medium fertility;
-Sunflower is a plant with moderate requirements for fertilization with nitrogen and phosphorus;
Sunflower is a good precursor for autumn wheat etc, [6].

Photo 1. Sunflower crop
Source: [3]

Globally, the cultivation of sunflower hybrids has helped to increase the attractiveness for this culture [11].
According to published statistical data, the sunflower culture is widespread in Europe, where over 70% of the world's production is achieved [4].
Currently, in Europe, the sunflower culture is widespread in the eastern and southern regions. Although there are significant sunflower productions in these regions, it is important to mention that the productivity of this crop is threatened by the adverse climatic changes in Europe. These climatic changes increase the vulnerability of sunflower crops, leading to the expansion of this culture to the northern areas of Europe [2].

MATERIALS AND METHODS

To achieve this paperwork we used a series of statistical data that were provided by specialized international sites. In order to carry out a study that would show the main realistic trends in the production and marketing sector of sunflower seeds worldwide, many specialized materials were consulted.

The main indicators that led to the realization of this study are: total areas cultivated with sunflower worldwide; total sunflower seed production worldwide; the total amount of fertilizer allocated for the production of sunflower; yield per hectare for sunflower seeds; human consumption of sunflower seeds; imports and exports of sunflower seeds worldwide. The indicators in this paper have been studied and analysed for the period 2012-2016.

RESULTS AND DISCUSSIONS

From the statistical data presented, the surface cultivated globally with sunflower oscillated from one period to the next. The largest area cultivated with sunflower in the world was recorded in 2016 (26,205,337 ha). On the opposite side, the smallest area cultivated with sunflower was in 2012 (25,071,000 ha). In 2016, the area planted with sunflower worldwide increased by 4.52% compared to 2012.

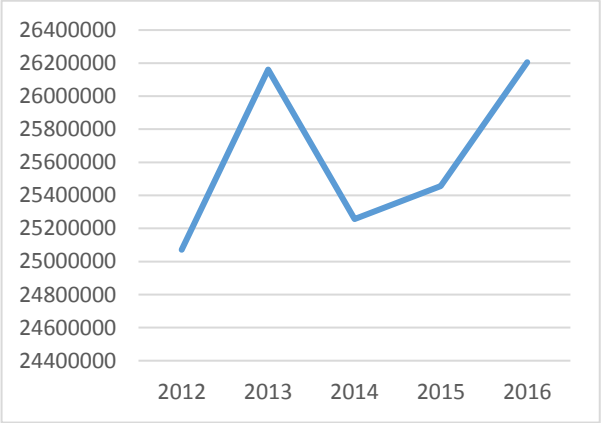

Fig. 1. The evolution of the area cultivated with sunflower worldwide, in the period 2012-2016 (ha)
Source: [4]

According to the statistical data published in 2016, the area cultivated with sunflower worldwide was distributed as follows: Europe (68.96% of the area cultivated worldwide with sunflower) respectively 18,073,117 ha; Asia (13.49%) respectively 3,537,592 ha; Americas (8.94%) respectively 2,343,571 ha; Africa (8.50%) respectively 2,228,056 ha; Oceania (0.87%) respectively 23,000 ha.

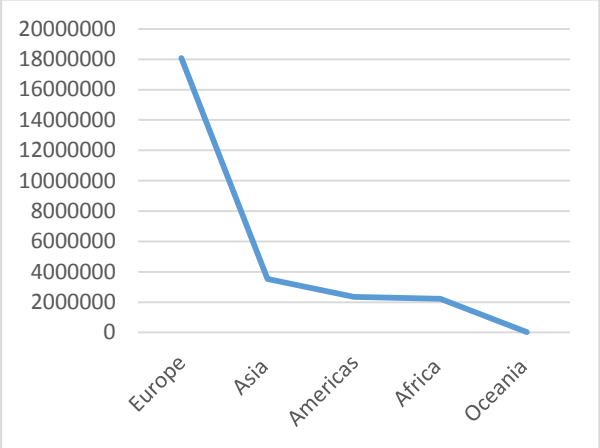

Fig. 2. Distribution of the sunflower areas by regions in 2016 (ha)
Source: [4]

Photo 2. Blooming sunflower crops
Source: [14]

Global sunflower seed production worldwide increased from 36,607,614 tonnes (2012) to 47,345,036 tonnes (2016). In 2016, the global sunflower seed production increased by 29.33% compared to 2012. During the analyzed period the production of sunflower seeds made at level varied from one year to the other.

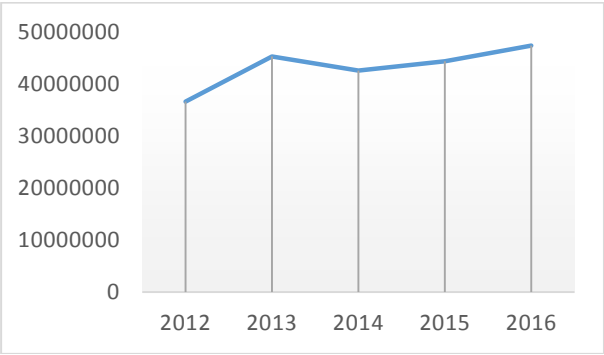

Fig. 3. The evolution of total sunflower seed production worldwide in 2012-2016 (tonnes)
Source: [4]

Photo 3. Sunflower seeds
Source: [12]

In 2016, 72.7% of the world sunflower seed production was made in Europe [4].
This is explained, on the one hand, by the fact that the largest sunflower area is cultivated in Europe and, on the other hand, by producing significant mean yields per hectare.
Also in 2016, according to data released by FAO, Asia made 12.9% of world sunflower seed production followed by the Americas (9.6%), Africa (4.7%) and Oceania (0.1%).

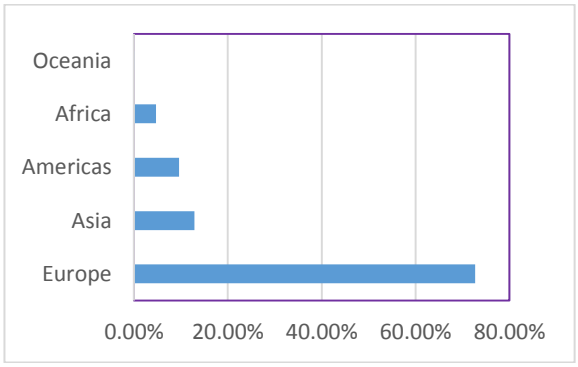

Fig. 4. Share of the production of sunflower seeds by regions in 2016 (%)
Source: [4]

In 2016, the ranking of the top ten sunflower seed producers worldwide was made up of: Ukraine (13,626,890 tonnes); Russian Federation (11,010,197 tonnes); Argentina (3,000,367 tonnes); China, mainland (2,587,422 tonnes); Romania (2,032,340 tonnes); Bulgaria (1,873,677 tonnes); Turkey (1,670,716 tonnes); Hungary (1,534,959 tonnes); United States of America (1,204,170 tonnes); France (1,189,832 tonnes).
In 2016, Ukraine achieved 28.78% of the production of sunflower seeds produced worldwide. It is necessary to specify that in

Ukraine sunflower is the main oleaginous crop. Compared to other oil plants, it ensures maximum oil yield per unit area. In this country, which is a large producer of sunflower seeds, the growth of sunflower areas is expected, as there is foreseen an increase in demand for sunflower seeds both domestically and on the external market [13].
The productivity of the sunflower culture is influenced by many quantifiable and less quantifiable factors. An important factor that determines the average crop yield per hectare for sunflower crop is represented by chemical fertilizers. Worldwide, in the period 2012-2016, fertilizer consumption has registered a decreasing trend.
The largest amount of fertilizer used worldwide was 1,137.6 thousand tonnes (2012), and the lowest amount used was 1,131.32 thousand tonnes (2016).

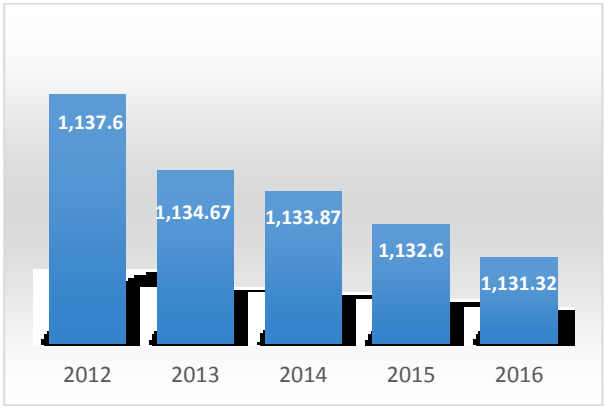

Fig. 5. Worldwide fertilizer consumption for sunflower crops in 2012-2016 (thousands tons)
Source: [5]

Average production per hectare of sunflower seeds worldwide (2012-2016) recorded yearly fluctuations. The highest average production per hectare of sunflower seeds was in 2016 (1.8 tonnes/ ha), and the lowest was registered in 2012 (1.4 tonnes / ha). In 2016, the average production per hectare of sunflower seeds worldwide increased by 28.57% compared to 2012.
From the data presented and analyzed for the period 2012-2016, it is noted that there is a close correlation between the amount of chemical fertilizers and the average production per hectare of sunflower seeds.

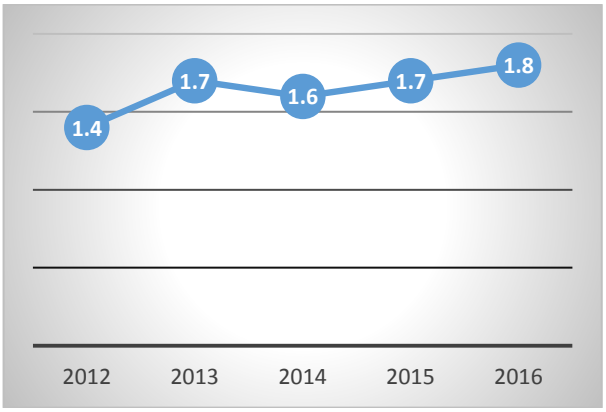

Fig .6. Average production dynamics per hectare of sunflower seeds worldwide in 2012-2016 (tonnes / ha)
Source: [4]

The consumption of sunflower seeds globally in the period 2012-2016 has seen a growing trend. The lowest consumption of sunflower seeds was recorded worldwide in 2012 (34,686.95 thousand tons), and the highest consumption was 36,095.33 thousand tons (2016).

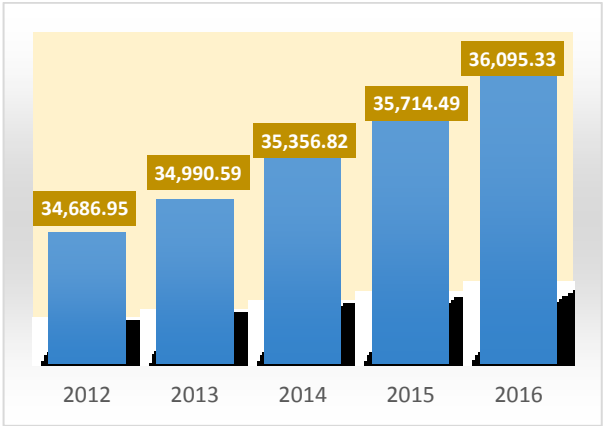

Fig. 7. The dynamics of the consumption of sunflower seeds worldwide in the period 2012-2016 (thousand tons)
Source: [5]

In the period 2012-2016, the quantitative imports of sunflower seeds worldwide have been evidenced by changes from one year to the next. The largest imported quantity of sunflower seeds was registered in 2013 (4,720,454 tonnes), and the smallest imported quantity was registered in 2012 (4,182,690 tonnes). In 2016, world sunflower seed imports increased by 11.10% compared to 2012. Also in 2016, global sunflower seed imports fell 1.56% compared to 2013, when the maximum point for quantitative imports was recorded.

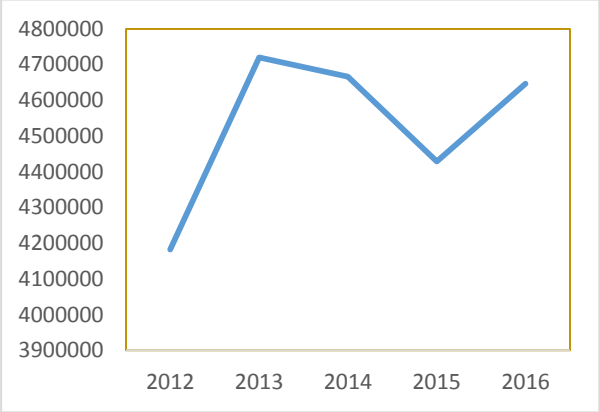

Fig.8. The dynamics of the world's sunflower seed quantity imports in 2012-2016 (tonnes)
Source: [4]

Quantitative imports of sunflower seeds in the main importing countries have fluctuated between 2013 and 2016. The Netherlands is the largest importer of sunflower seeds (646,667-690,442 tonnes), except for 2013 when it was overtaken by Turkey, with imports of 710,843 tonnes [17].

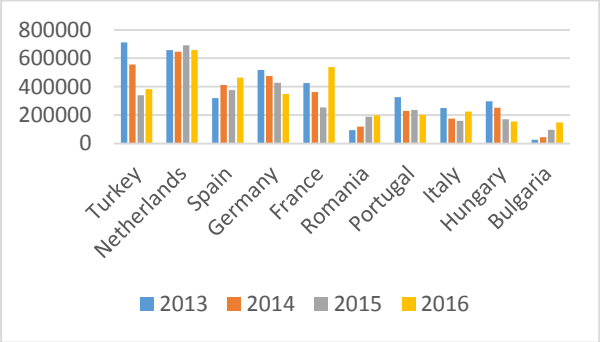

Fig. 9. Top of the main importers of sunflower seeds in 2013-2016 (tons)
Source: [17]

The value of imports of sunflower seeds worldwide during the period 2013-2016, according to official data, varied from one year to the next. In 2016, the highest value imports were recorded, of 3,187,737 Euros. The smallest value imports for sunflower seeds worldwide were € 2,801,164 (2014) [17].

According to the official data published for the period 2012-2016, the world's quantitative exports of sunflower seeds have varied from year to year. The largest exported quantity of sunflower seeds was registered in 2013 (5,295,515 tons) and the smallest exported quantity was in 2012 (4,246,600 tons). In 2016, global sunflower seed exports increased by 15.6% compared to 2012. Also in 2016, the global quantitative exports of sunflower seed declined by 7.3% compared to 2013, when it was the maximum for quantitative exports.

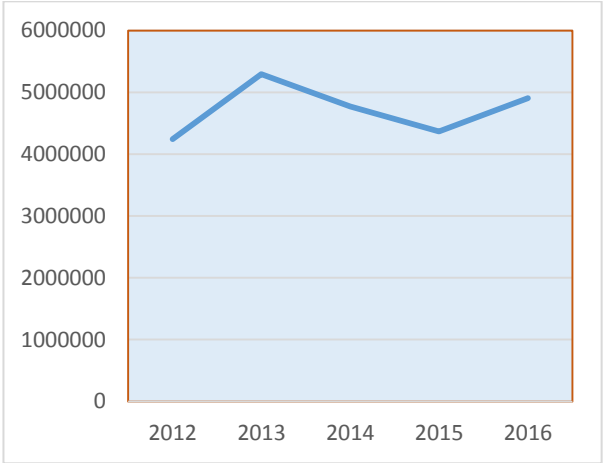

Fig. 10. The dynamics of quantitative exports of sunflower seeds worldwide in 2012-2016 (tonnes)
Source: [4]

Quantitative exports of sunflower seeds to the main exporting countries recorded changes over the period 2013-2016. Romania is the leader of the exporters of sunflower seeds (1,099,349-1,183,712 tonnes) [17].

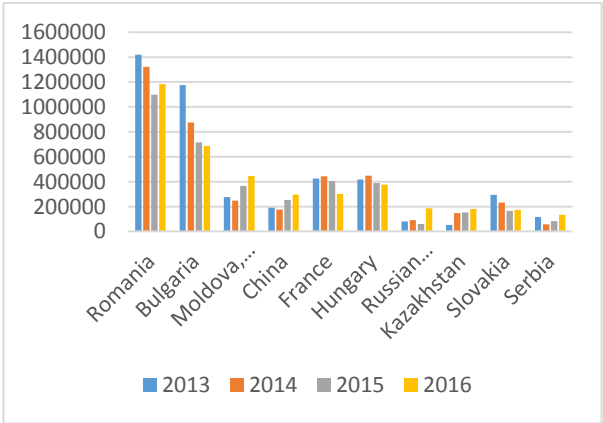

Fig. 11. Top of the main exporters of sunflower seeds in 2013-2016 (tons)
Source: [17]

The value of worldwide sunflower seed exports over the period 2013-2016, according to published data, has changed each year. In 2013, we recorded the highest export value, of 3,172,826 euros. The smallest value exports for sunflower seeds worldwide was 2,573,667 euros (2014) [17].

Nowadays, people's orientation towards organic food is becoming more and more visible, which makes it possible for the producers of sunflower seeds to grow this plant in an ecological system. Sunflower seeds made in an ecological system would, on the one hand, provide more substantial income for producers and, on the other hand, the environment would be less affected.

CONCLUSIONS

Following the analysis of the main tendencies in the production and marketing of sunflower seeds manifested in the world for the period 2012-2016, the following aspects are observed:

-The global area cultivated with sunflower increased by 4.52% in 2016 compared to 2012;

-In 2016, Europe held 68.96% of the area cultivated with sunflower worldwide;

-The world's largest production of sunflower seeds was 47,345,036 tons in 2016;

-Europe has obtained 72.7% of the total sunflower seed produced globally in 2016;

-Ukraine was the world's largest producer of sunflower seeds registered in the world in 2016 (13,626,890 tonnes);

-The chemical fertilizers used during the analyzed period were on a downward trend;

-The best average yield per hectare for sunflower seeds registered worldwide was 1.8 tons / ha in 2016;

-In 2016, there was the highest consumption of sunflower seeds, 36,095.33 tons;

-In 2013, was registered the most significant quantity of sunflower seeds imported worldwide, 4,720,454 tons;

-On average, the Netherlands is the leader of the quantitative exports of sunflower seeds from the analysed period;

-In 2013 was achieved the world's largest quantity of sunflower seed export 5,295,515 tons;

-Romania is the leader among the exporters of sunflower seeds. Quantitative exports of sunflower seed ranged from 1,099,349 to 1,183,712 tonnes;

In perspective, it is expected an increase in the areas cultivated with sunflower, because on the one hand it provides stable incomes for the producers, and on the other hand, the demand for sunflower seeds which are used in various fields of activity is expanding.

REFERENCES

[1]Arghiroiu, G.A., Cristea, S., Alecu, I.N, 2015, Tendencies regarding trade with oleaginous seeds of Romania. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 15, Issue 3, pp. 49-58

[2]Debaeke, P., Casadebaig, P., Flenet, F., Langlade, N., 2017, Sunflower crop and climate change: vulnerability, adaptation, and mitigation potential from case-studies in Europe, OCL 2017, 24(1) D10 https://www.ocl-journal.org/fr/articles/ocl/full_html/2017/01/ocl160024/ocl160024.html, Accessed on Iuly 15, 2018.

[3]Enoiu, I., 2016, Ecological products for sunflower, The World Village Magazine, (Produse ecologice pentru floarea soarelui, Revsita Lumea Satului, 6 May 2016, https://www.lumeasatului.ro/articole-revista/2898-produse-ecologice-pentru-floarea-soarelui.html, Accessed on Iuly 25, 2018.

[4]Food and Agriculture Organization of the United Nations http://www.fao.org/faostat/en/#data/QC/visualize, Accessed on July 10, 2018.

[5]Food and Agricultural Policy Research Institute-FAPRI http://www.fapri.org/tools/outlook.aspx, Accessed on July 15, 2018.

[6]Ion, V., Fitotechnology, 2010, Faculty of Horticulture (Fitotehnie, 2010, Facultatea de Horticultura) http://www.horticultura-bucuresti.ro/images/pdf/Fitotehnie.pdf, Accessed on July 15, 2018.

[7]Pistalu, V., 2011, Researches regarding the reaction of sunflower local and foreign hybrids to irrigation under stress in South of Moldova-Summary (Cercetari privind comportarea unor hibrizi de floarea soarelui autohtoni si straini la irigarea in conditii de stres, in Sudul Moldovei-Sinteza) https://www.usamv.ro/images/Programe_de_studii/Doctorat/Teze_de_doctorat/Arhiva_2011/Pistalu_Sinteza.pdf, Accessed on Iuly 25, 2018.

[8]Popescu, A., 2012, Research on Romania's oil seeds biodiesel production potential. Annals of the Academy of Romanian Scientists. Series on Agriculture, Silviculture and Veterinary Medicine Sciences, Volume 1, Number 2, Online Edition. http://aos.ro/wp-

content/anale/AVol1Nr2Art.8.pdf/, Accessed on July 15, 2018.
[9]Popescu, A., 2012, Research regarding oil seeds crops development in Romania in the EU context. Professional paper, Economics of Agriculture1/2012,UDC: 633.85(498):EU, pp. 129-137 https://ageconsearch.umn.edu/bitstream/123964/2/10%20-%20Popescu.pdf
[10]Soare, E., David, L., Bălan, A.V., 2014, Researches on oilseeds market in Romania. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 14 Issue 4, pp.265-272
[11] Stanciu, D., Stanciu, M., 2007, Researches on the production of sunflowers seeds, Production of seeds, AN. I.N.C.D.A. Fundulea, Vol. LXXV, Jubilee Volume, pp.275-285 (Cercetări privind producerea de seminţe la floarea-soarelui, Producerea de seminte, AN. I.N.C.D.A. Fundulea, Vol. LXXV, 2007, Volum jubiliar, pp.275-285)
http://www.incda-fundulea.ro/anale/75/75.15.pdf, Accessed on July 15, 2018.
[12]Sunflower (Floarea Soarelui) http://allagro.ro/product/floarea-soarelui, Accessed on Iuly 20, 2018
[13]Sunflower, 2016 (Floarea Soarelui, 2016) http://movca.md/wp-content/uploads/2016/02/sunflower.pdf, Accessed on July 25, 2018.
[14]Sunflower crop gain opportunities: latest generation genetics with superior agro-food value, 2017, Published on 19 Apr. in: Vegetal, Autor: AgroRomania.ro (Oportunitati de castig la cultura de floarea soarelui: Genetica de ultima generatie cu valoare superioara agroalimentara, 19. Aprilie 2017 in: Vegetal)
agroromania.manager.ro/articole/vegetal/oportunitati-de-castig-la-cultura-de-floarea-soarelui-genetica-de-ultima-generatie-cu-valoare-superioara-agroalimentara-22849.html, Accessed on July 15, 2018.
[15]Sunflower culture, 2012, Agricultural Gazette (Cultura de floarea-soarelui, 7 Februarie 2012, Gazeta de Agricultura)
https://www.gazetadeagricultura.info/plante/plante-tehnice/470-floarea-soarelui/351- cultura-de-floarea-soarelui.html, Accessed on Iuly 15, 2018.
[16]Sunflower culture - All the information you need, BASF Divizia Agro, 2017 (Cultura de floarea soarelui-Toate informaţiile de care ai nevoie, 14.04.2017, BASF Divizia Agro
https://www.agro.basf.ro/agroportal/ro/ro/stiri/stirile_agricole/cultura-de-floarea-soarelui-toate-informatiile-de-care-ai-nevoie-296576.html, Accessed on Iuly 25, 2018
[17] Trade Map, ITC. https://www.trademap.org/tradestat/Country_SelProduct_TS.aspx?nvpm=1|||||1206|||4|1|1|1|2|1|2|1|1, Accessed on July 15, 2018.