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**Conference Paper**

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**Provided in Cooperation with:**

The Research Institute for Agriculture Economy and Rural Development (ICEADR), Bucharest

*Suggested Citation:* Bogos, Iulia Bianca; Petre, Ionut Laurentiu; Sterie, Maria Cristina (2022) : Area and production estimates for vineyards, In: Rodino, Steliana Dragomir, Vili (Ed.): Agrarian Economy and Rural Development - Trends and Challenges. International Symposium. 13th Edition, The Research Institute for Agricultural Economy and Rural Development (ICEADR), Bucharest, pp. 89-95

This Version is available at:

<https://hdl.handle.net/10419/301710>

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# AREA AND PRODUCTION ESTIMATES FOR VINEYARDS

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**Abstract:** *Viticulture is an important activity in Romania, with a tradition since ancient times, it is ideal to cultivate especially for its geographical position and pedo-climatic conditions. In Romania, the area under vines is decreasing between 2015 and 2021, while total grape production is increasing considerably during this period. At EU level, Romania ranks 5th in terms of vineyard area and 6th in terms of total grape production, behind countries such as Italy, Germany, France, Portugal and Spain. Using the Forecast method, it is estimated that in 2030 the area under vines will reach 149 thousand hectares, the optimistic scenario shows that the area will reach 156 thousand hectares and the pessimistic scenario shows that the area will reach 99 thousand hectares. In the case of total grape production, it is estimated that in 2030, Romania will produce 99 thousand tonnes, according to the pessimistic scenario it will reach 1.42 million tonnes, and according to the pessimistic scenario it will reach 400 thousand tonnes.*

**Keywords:** *estimates, viticulture, Romania.*

**JEL classification:** Q10, L66, C13.

## INTRODUCTION

Romania is suitable for vine growing due to its climate, soil composition and hilly and lowland areas which are suitable for viticulture. This activity dates back to ancient times and is one of the most precious natural riches (Tudor, 2022, Dumitru, 2021).

Viticulture is important for the national economy because vines can be grown on sloping land with sandy, eroded and poorly solidified soil, on which other crops cannot be grown. Grapes are mainly used for making wine and wine distillates, but they are also used in the food industry for making jams, compotes, preserves, juice, raisins, while pips are used for making oil (Lădaru, 2015; Chiurciu, 2020).

A country's wine trade shows the level of competitiveness that can be improved by increasing wine exports and/or the average unit price. From this point of view, Romania is unspecialised in wine exports and measures are needed to propel Romania on the international wine market (Ștefan, 2017; Antocea, 2017).

European funds have played and continue to play an important role in the development of various agricultural sectors, a benefit brought by the accession to the European Union (Sterie, 2021).

As regards measures dedicated to the wine sector, in the period 2009-2013, investments were made for this sector, but only through rural development programmes, and in the period 2014-2018, Romania will adopt measures exclusively for the development of this sector. Among the objectives they have pursued, these have focused on restructuring and respectively transforming vineyards and planting new varieties of higher quality to be certified (Iancu, 2022; Micu 2022).

Climate change plays a key role in the production of wine grapes, their quality is directly influenced and varieties that produce high quality grapes are sensitive to these pedo-climatic changes. Rising temperatures have direct effects on the duration of vegetative development, forced ripening which alters the characteristics of the berries (Micu, 2022; Iancu, 2022).

## MATERIALS AND METHODS

The research is based on data provided by the National Institute of Statistics and Eurostat on the area under vines and total grape production in Romania and by development region. The main statistical indicators were calculated on the basis of the data:

- Standard deviation

$$\sigma = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n - 1}}$$

- Coefficient of variation

$$C = \frac{\sigma}{\bar{X}} * 100$$

- Growth rate

$$\bar{R} = (I \times 100) - 100$$

Using the FORECAST method in Excel, a forecast was made for the area of vines under vines and total grape production for the next 9 years, based on data recorded from 2000 to 2021. The aim of the work is to identify the annual growth rate and to determine forecasts for the area under vines and total grape production in Romania for the period 2021-2030.

## RESULTS AND DISCUSSION

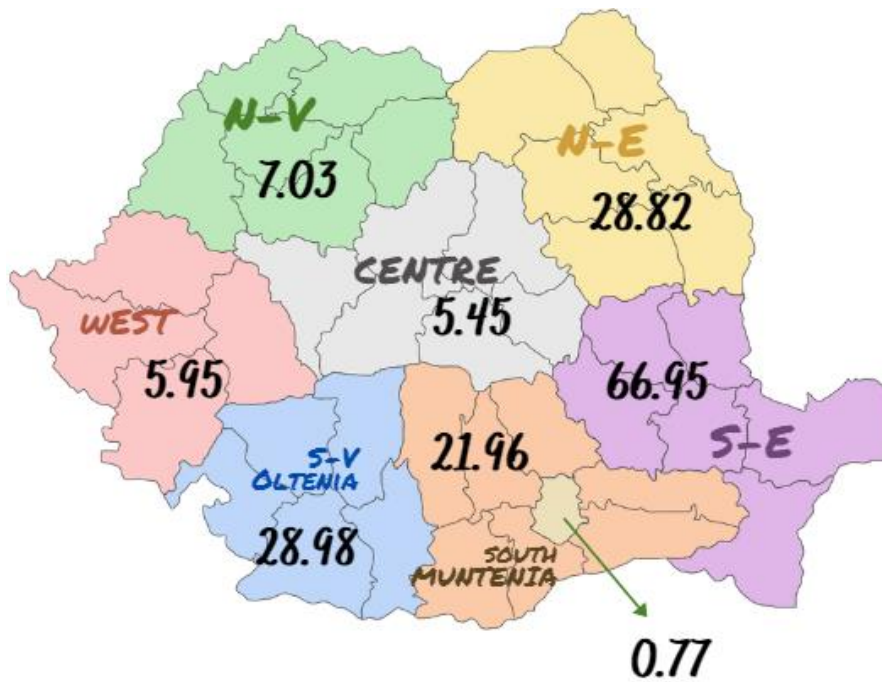
The area under vines in Romania fluctuates between 2015 and 2020, so in 2015 an area of 178.12 thousand hectares was recorded, reaching 165.29 thousand hectares in 2020, showing a decrease of about 2%. The area of vines under vines shows a negative annual rate, 1.21%, and according to the coefficient of variation (3.21%), the data series shows a small variation (Table 1).

**Table 1. Area under vines and total grape production 2015-2021**

Year	2015	2016	2017	2018	2019	2020	2021	Average	Standard deviation	Coef. of var. (%)	Growth Rate %
Surface (thousands of hectares)	178.12	178.15	177.26	177.50	178.23	167.35	165.55	174.59	6	3.21	-1.21
Total production (thousand tons)	798.77	736.89	1,067.12	1,144.31	977.81	935.96	1,009.19	952.86	144	15.10	3.97

Source: processing based on INS data

As regards the total production of grapes in Romania, an increase of 26.34% can be observed in 2021 (1009.19 thousand tons) compared to the production of vines on the vine recorded in 2015 (798.77 thousand tons). The annual rate in the case of total production is positive (3.97%) and the data series shows a medium variation, according to the coefficient of variation (15.1%) (Table 1).

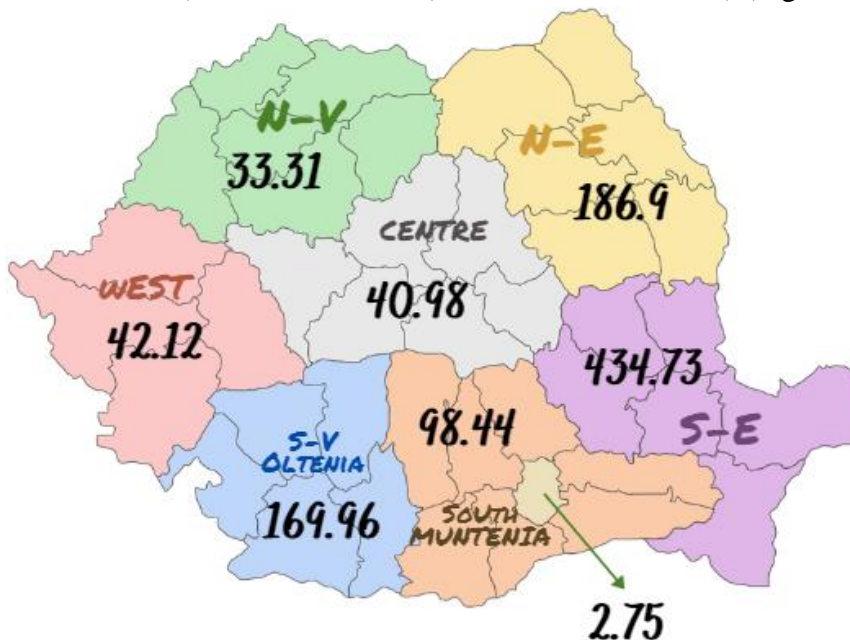


**Figure 1. Area under vines by development region in 2021 (thousand hectares)**

Source: processing based on INS data

According to the data provided by the National Institute of Statistics, the regions with the largest areas of vines in bearing in 2021 are the South-East with 66.95 thousand hectares, followed by South-West-Oltenia with 28.98 thousand hectares and North-East with 28.82 thousand hectares.

Among the regions with the lowest areas under vines are the West (5.95 thousand hectares), Centre (5.45 thousand hectares), Bucharest-Ilfov (0.77 thousand hectares) (Figure 1).

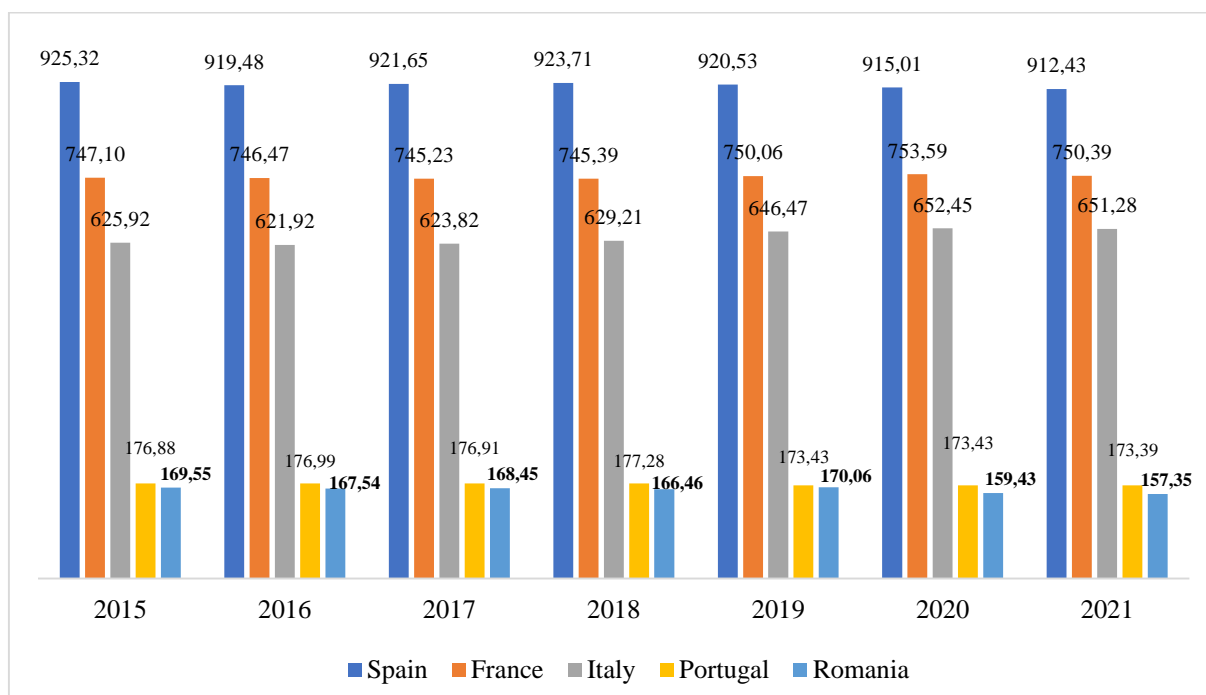


**Figure 2. Total grape production by development region in 2021 (thousand tonnes)**

Source: processing based on INS data

In the case of total grape production in Romania in 2021, the highest production was recorded in the South-East Region with 434.73 thousand tonnes, followed by the North-East Region with 186.9 thousand tonnes and South-West-Oltenia with 169.96 thousand tonnes (Figure 2).

In 2021, Romania ranked 5th in terms of the area under wine grapes, being overtaken by Spain, which cultivated an area of 912.43 thousand hectares, followed by France (750.39 thousand hectares), Italy (651.28 thousand hectares), Portugal (176.39 thousand hectares) (Figure 3).



**Figure 3. Main countries with the largest area under wine grapes in the EU level (thousands of hectares)**

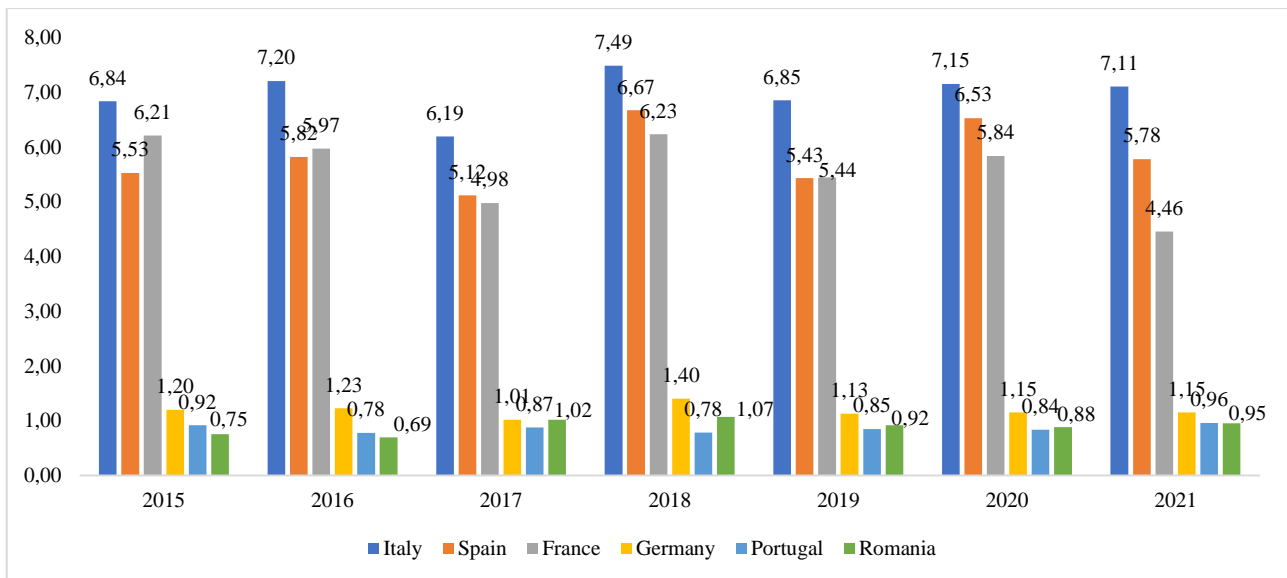
Source: processing based on EUROSTAT data

At the European Union level in the period 2015-2021, Spain ranks at the top of the largest areas cultivated with grapes, with an area of 925.32 thousand hectares in 2015, reaching 912.43 thousand hectares in 2021, showing a slight decrease of 1.4%.

A slight increase of 0.44% and 4%, respectively, compared to the area recorded in 2015 for the two countries is noted for France (750.39 thousand hectares) and Italy (651.28 thousand hectares) in 2021 (Figure 3).

In terms of total wine grape production in 2021, Romania ranks 6th with a total production of 0.95 million tonnes, topped by Italy with a production of 7.11 million tonnes, followed by countries such as Spain with 5.78 million tonnes, France with 4.46 million tonnes, Germany with 1.15 million tonnes and Portugal with 0.96 million tonnes.

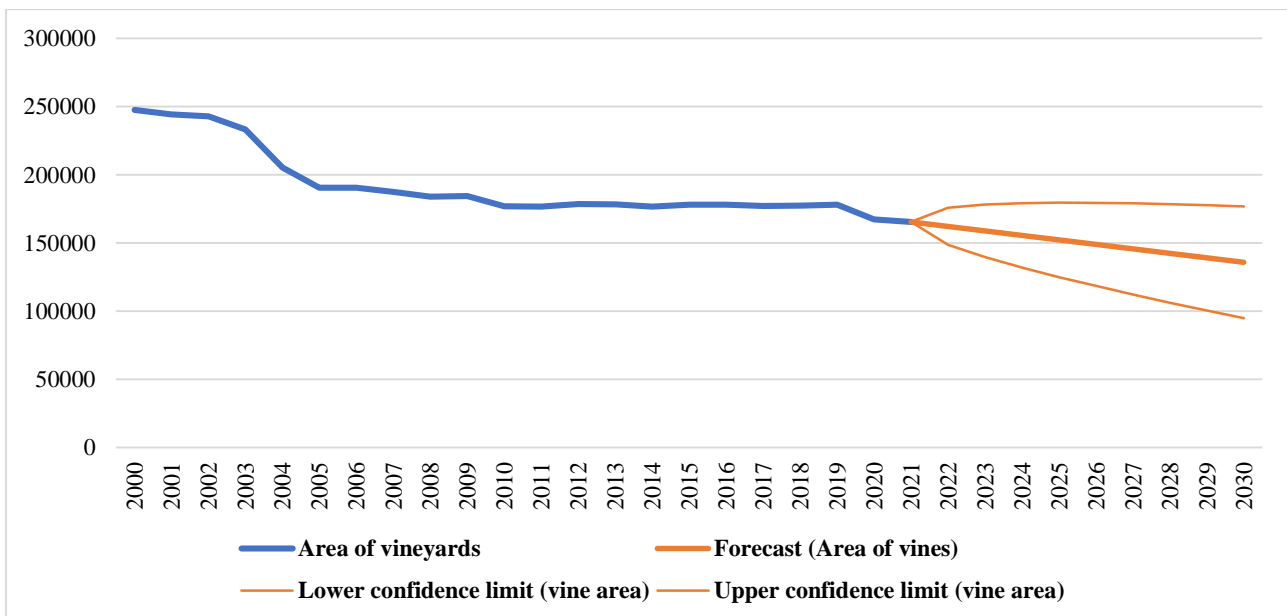
Although in the period 2015-2021, the first place in the area under vines on the vine is occupied by Spain, in the case of wine grape production, the first place is occupied by Italy, which in 2015 produced 6.84 million tonnes, reaching in 2021 to produce 7.11 million tonnes, an increase of about 4%. In the case of Germany, although it ranks 6th in terms of area under grapes, in terms of production it ranks 4th in the period 2015-2021, showing a decrease of 4% in 2021 (1.15 million tonnes) compared to 2015 (1.2 million tonnes) (Figure 4).



**Figure 4. Main countries with the highest production of wine grapes at EU level (million tonnes)**

Source: processing based on EUROSTAT data

Using data taken from the INS, a forecast of the area under vines in Romania up to the year 2030 was made. In 2000, an area of 247.5 thousand hectares was recorded, reaching an area of 165.5 thousand hectares in 2021. According to the estimates, the area under vines will reach an area of 149 thousand hectares, and according to the optimistic scenario it will increase to 156 thousand hectares, while the pessimistic scenario will decrease to 99 thousand hectares (Figure 5).

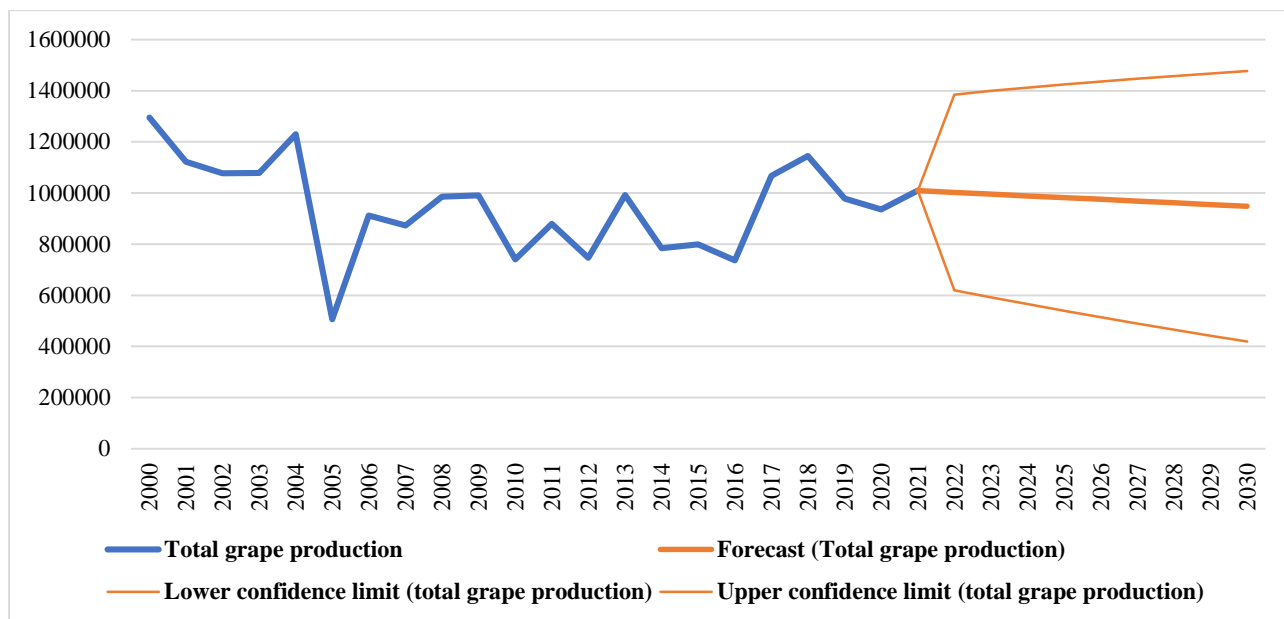


**Figure 5. Forecast area under vines in Romania (hectares)**

Source: processing based on INS data

In the case of total grape production, Romania produced 1.3 million tonnes of grapes in 2000, reaching a production of just over one million grapes in 2021. According to estimates, in 2030, grape production will reach 99 thousand tonnes, and under the optimistic scenario, 1.42 million tonnes

will be produced, and under the pessimistic scenario, just over 400 thousand tonnes of grapes will be produced (Figure 6).



**Figure 6. Forecast total grape production in Romania (hectares)**

Source: processing based on INS data

## CONCLUSIONS

Romania recorded a 2% decrease in the area under vines in 2021 (165.55 thousand hectares) compared to the area recorded in 2015 (178.12 thousand hectares), while total grape production increased by 26% in 2021 (1009.86 thousand tonnes) compared to the production recorded in 2015 (789.77 thousand tonnes). In the case of the development regions, South-East, North-East and South-West-Oltenia cultivated the largest areas under vines and recorded the highest total grape production. At the opposite end of the scale are the West, Centre and Bucharest-Ilfov regions in terms of areas and grape production.

Romania ranks 5th in the European Union in terms of vineyard area, with 157.35 thousand hectares, behind Spain (912.43 thousand hectares), France (750.39 thousand hectares), Italy (651.28 thousand hectares) and Portugal (1763.39 thousand hectares). In terms of total grape production, Romania ranks 6th with a production of 0.95 million tonnes, the first places being occupied by Italy with a production of 7.11 million tonnes, followed by Spain with 5.78 million tonnes, France with 4.46 million tonnes, Germany with 1.15 million tonnes and Portugal with 0.96 million tonnes.

According to estimates made over a period of 21 years, the area under vines in Romania will reach 149 thousand hectares in 2030, while under the optimistic scenario it will rise to 156 thousand hectares and the pessimistic scenario will drop to 99 thousand hectares. In the case of production, 99 thousand tonnes will be produced in 2030, and under the optimistic scenario, 1.42 million tonnes will

be produced, while under the pessimistic scenario just over 400 thousand tonnes of grapes will be produced.

The development of the wine sector and the increase in wine sales can be achieved by using new technologies based on innovation. Promotion also plays a very important role in increasing the image of wineries and the varieties that produce high-quality wine, contributing to economic growth.

An opportunity to increase farmers' incomes is wine tourism, which, thanks to the vineyard landscapes and the quality of Romanian wines, has a high potential for winemakers.

## REFERENCES

1. Antoce, A. O., & Calugaru, L. L. (2017). Evolution of grapevine surfaces in Romania after accession to European Union—period 2007–2016. *In BIO Web of Conferences*, 9, 03018).
2. Chiurciu, I. A., Zaharia, I., & Soare, E. (2020). Production of wine grapes and cultural traditions related to wine in Romania. *Sci. Pap. Ser. Manag. Econ. Eng. Agric. Rural Dev*, 20, 133-144.
3. Dumitru, E.A., Ursu, A., Tudor, V.C., Micu, M.M. (2021). Sustainable Development of the Rural Areas from Romania: Development of a Digital Tool to Generate Adapted Solutions at Local Level. *Sustainability*, 13, 11921. <https://doi.org/10.3390/su132111921>
4. Iancu Tiberiu, Valentina Constanta Tudor, Eduard Alexandru Dumitru, Cristina Maria Sterie, Marius Mihai Micu, Dragos Smedescu, Liviu Marcuta, Elena Tonea, Paula Stoicea, Catalin Vintu, Andy Felix Jitareanu, Luiza Carmen Costuleanu. (2022). A Scientometric Analysis of Climate Change Adaptation Studies. *Sustainability*. 2022; 14 (19):12945.
5. Iancu, T., Petre, I.L., Tudor, V.C., Micu, M.M., Ursu, A., Teodorescu, F.-R., Dumitru, E.A. (2022). A Difficult Pattern to Change in Romania, the Perspective of Socio-Economic Development. *Sustainability*, 14, 2350. <https://doi.org/10.3390/su14042350>.
6. Lădaru, G. R. & Beciu, S. (2015). Trends Of Wine Market In Romania: Competitiveness And Development Opportunities In The Context Of Markets Globalization, *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development* 15(2).
7. Micu, M.M., Dinu, T.A., Fintineru, G., Tudor, V.C., Stoian, E., Dumitru, E.A., Stoicea, P., Iorga, A. (2022). Climate Change—Between “Myth and Truth” in Romanian Farmers’ Perception. *Sustainability*, 14, 8689. <https://doi.org/10.3390/su14148689>.
8. Micu, M.M., Dumitru, E.A., Vintu, C.R., Tudor, V.C., Fintineru, G. (2022). Models Underlying the Success Development of Family Farms in Romania. *Sustainability*, 14, 2443. <https://doi.org/10.3390/su14042443>.
9. Sterie C.M.& Dumitru E.A. (2021) Comparative Analysis On Accessing European Funds Through The Two National Rural Development Programs In The South- Muntenia Region, Romania. *Scientific Papers. Series "Management, Economic Engineering In Agriculture And Rural Development"*, Vol. 21 Issue 1, Print Issn 2284-7995, 729-734.
10. Ștefan, P., Mann, S., Fintineru, G., & Crețu, R. C. (2017). Study regarding the situation of wine producers in Romania. *Scientific Papers. Series Management, Economic Engineering in Agriculture and rural development*, 17(3), 391-396.
11. Tudor, V.C., Dinu, T.A., Vladu, M., Smedescu, D., Vlad, I.M., Dumitru, E.A., Sterie, C.M., Costuleanu, C.L. (2022). Labour Implications on Agricultural Production in Romania. *Sustainability*, 14, 8549. <https://doi.org/10.3390/su14148549>.