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**“Viticulture.Future.Danube Region -
The effects of climate change on viticulture and wine tourism”
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Introduction

Excellency, distinguished delegates, ladies and gentlemen,

(On behalf of Mr. Petre DAEA - Minister of Agriculture and Rural Development)

I would first like to express my appreciation for the good collaboration between Romania and the Federal Republic of Germany at both federal and land level.

In July 2018, at the headquarters of the Ministry of Agriculture and Food, Minister Petre DAEA was received by Minister JULIA KLÖCKNER together with the Ambassador of Romania in the Federal Republic of Germany, His Excellency Emil Hurezeanu, context in which were discussed aspects related to the Common Agricultural Policy and were identified bilateral cooperation actions. Romania will have a major involvement in the preparation of the workings of the Global Forum on Agriculture and Food, an event taking place on the margins of the Berlin Green Week Exhibition (17-19 January 2019), as well as in the representation of Romania at the Green Week International Fair, from the perspective of being the holder of the rotating presidency of the Council of the European Union.

I would like to thank Mr. Rudolf Nickenig, Secretary General of the German Wine Growers Association, for the invitation addressed to us at our stand at Romania's Green Week Exhibition 2018. I congratulate you on the initiative of organizing this meeting and I am convinced that the debates will contribute significantly to identify adequate solutions for the agricultural and wine sector mainly to combat the effects of climate change.

Convinced that the topic proposed for debate at the Global Forum on Agriculture and Food, namely 'Agriculture becomes digital - smart solutions for the future of agriculture', is a challenge for the common interest, I think it is a good opportunity to find ourselves in Berlin at the highest level and at the same time to act together

towards a sustainable development of the European agricultural sector in the current context.

Short history

The beginnings of viticulture in this part of the world date back at least 4000 years. The legend says that Dionysus, the god of wine, was born in Thrace, on the land that today is the territory of Romania.

The current situation

Romania ranks 5th in the European Union as the wine-growing area and the 6th place in the production of grapes and wine.

The total area under vines for wine oscillated between 180,400 ha in 2007 to 17,7150 ha in 2017. During the period 2007-2017, more than 30000 ha of plantations were set up under the restructuring / reconversion measure.

The main local noble varieties of grapes for cultivated wine are: Feteasca royal, Feteasca alba, Feteasca neagra and Black Băbeasca which hold 29061 ha.

The varieties of the international range: Merlot, Cabernet Sauvignon, Pinot Noir, Italian Riesling, Aligote, Sauvignon, Chardonnay and Muscat Ottonel hold approximately 40000 ha.

The total wine production oscillates according to the favourability of the wine year between 4000-5300 thousand hl, while in the year 2017 it is 4252,9 thousand hl.

The assortment is in favour of white wines, which account for 67% of total wine production.

Among the top quality wines, the predominance of wine is with D.O.C. Designation of Origin Controlled on Geographical Indication Wine.

Regarding the structure of the viticultural holdings, the share is detained by the less than 1 hectare (51,01%) and the ones between 1-5 ha (42%). They hold 64.32% of the area under cultivation.

Dynamics of import and export of wines

There is a downward trend in imports and a slight increase in exports as a result of sustained participation in international wine competitions. The Romanian wines, especially those obtained from native varieties (Fetească Neagră, Băbească Neagră, Fetească Regală, Frâncusă, Grasă de Cotnari, Busuioacă de Bohotin and Tămâioasă Românească), were appreciated and medals. Relatively recently, at the XXVth

World Concours of the XXIVth edition (2017), 7 gold medals and 21 silver medals were won and at the China Wine & Spirits Awards, Romania won 8 medals, of which 4 were Golden.

Romanian vineyard area

It comprises 8 wine regions, namely Transylvania Plateau, Moldova Hills, Oltenia and Muntenia Hills, Banat Hills, Crişana and Maramureş Hills, Dobrogea Hills, Danube Terraces and Sandy Terraces and other favorable lands in the south of the country. In all vineyards there are famous vineyards for the production of white, red or aromatic wines.

In 2005, on the basis of an ecopedological and ecoclimatic study elaborated by the Institute for Research Development for Viticulture and Winegrowing Valea Călugărească, the Romanian wine-growing areas were set up in 3 wine-growing areas of the European Union.

Measures to support the wine sector

The wine sector benefits from financial support schemes from the EU and national budgets.

For the 2014-2018 programming period, wine grape growers can access funds from the European Agricultural Guarantee Fund F.E.G.A. through the National Support Program of Romania in the wine sector, with an annual financial allocation of 47.7 million euro, for the following 5 support measures: wine promotion; restructuring and conversion of vineyards; harvest insurance, investment and distillation of by-products.

The national legislation related to the National Support Program of Romania in the wine sector 2014-2018 was put in line with the Community legislation, for each measure.

On 1 March 2018, Romania notified the European Commission to the European Commission of the new National Support Program in the wine sector 2019-2023 in which the same measures as for the current program were agreed for funding.

Climate change recorded in Romania

The National Meteorological Agency has developed a climate study based on the more than 100-year meteorological measurements recorded at 14 weather stations located in different areas of the country, which show that:

- the average annual temperature increased by 1.96 ° C in 2015 compared to the average of the period 1961-1990.

- the warmest 16 years between 1901 and 2015 were registered in the period 2000-2015, with the exception of 1994.

- there is a tendency to increase the number of heat days and tropical nights (warmer summers) and decrease precipitation and, implicitly, increase the soil water deficit in the period with maximum water demand for agricultural crops in June-August.

- the frequency of droughts has increased since 2001, in the decade 2001-2010, with 6 years drought.

Climate change recorded in vineyard area in Romania

From the analysis of the data recorded by the weather stations of the wine research units (comparison between the average values between 2000 and 2012 and the multiannual averages), there are evidenced changes in the climatic factors regime, namely:

- Increase in annual average temperature between 0.9 ° C (Targu-Bujor vine center) and 2.1 ° C (Murfatlar wine-growing center)
- Increase in annual rainfall (max. Daily > 30 ° C) and decrease in winter annual frequency (max. Daily ≤ 0 ° C)
- Significant increase in the average summer temperature and maximum winter and summer temperatures
- Increasing the sunshine duration during vineyard vegetation, with values ranging from 29 hours (Valea Calugareasca wine center) and 96 hours (Murfatlar viticulture center)
- Very uneven distribution of rainfall during vineyard vegetation (May, June with precipitation over 100 mm, followed by long periods without precipitation)
- The appearance in July and August of time periods (shorter or longer) with cold temperatures (35-40 ° C) with no precipitation, which led to the phenomenon of excessive drought.

Climate studies based on meteorological data recorded in Romania's vineyards over the last 40 years have highlighted the aridization trend recorded in the wine-growing areas of Dobrogea, S-E of Moldova, eastern Muntenia and the south of the country.

The impact of climate change on vineyard behaviour

The studies have shown, especially in the last 15 years, the advancement of vegetative phenol-phases in the vine, in 1-2 years, for 1-2 weeks to be blighted and blooming, and 2-3 weeks for pruning and grape maturation.

The vegetative growth and accumulation of dry matter in the annual organs of vine vines have been very varied, depending on the hydric and helio-thermic regime. In climatic years with high temperatures and poor water regime, the foliar surface was reduced to half of the values recorded in a normal year (1.73 m² / bun, compared to 3-4 m² / hump).

The impact of climate change has been beneficial only as regards the accumulation of sugar in grapes.

Negative effects have been reported with regard to the acidity of wort, anthocyanin content and flavourings, which recorded significant decreases especially in wine-growing areas affected by drought and / or extreme temperatures in August and September.

The impact of climate change on the wine industry

The impact of climate change on the wine industry is manifested by: the change in the composition of the basic nutrients of the yeasts and the extraction of the oenological compounds from the grapes; altering the dynamics of alcoholic fermentation and maceration; modification of the basic composition (alcoholic strength, pH, extract, ash) and specific composition (phenolic compounds, flavours) of raw wines; modifying the dynamics of specific oenological compounds during aging and aging of wines.

Measures taken by the Romanian state to diminish the disruptive effect of climate change

1. Elaborating strategies

To address and resolve issues related to food security and climate change, structural strategies such as the National Strategy for Research and Development (2014-2020), the National Strategy for Sustainable Development (2013-2020-2030), the Research Strategy -innovation development in the medium and long-term agri-food sector 2014-2020 / 2020-2030, the Romanian National Strategy on Climate Change (2013-2020), etc.

In the Romanian National Strategy on Climate Change, for the field of viticulture are envisaged: introduction of modern technologies including the use of drought-resistant varieties or rootstocks, fertilization measures that increase the resistance to frost and diseases, optimization of agro-technical works applied to the soil and the plant in order to protect the organic matter and maintaining soil moisture, etc.

2. Legislative actions

2.1. Implementation of the national anti-hail system and precipitation growth

Law no. 173/2008 on the active interventions in the atmosphere established the legislative framework of the interventions active in the atmosphere, the structure of the system, the way of financing and implementation of the program and the establishment of the Administration of the National System of Anti-Hail and Precipitation Increase. The national anti-hail and precipitation growth system is conceived as a coherent, nationally interconnected regional system with hail-fighting units using cloud seeding with condensation centres to limit dimensional growth of ice cloud clouds. At present, 34 launch sites are operational, covering a total area of 500,000 ha.

2.2. National Program for Rehabilitation of the Main Irrigation Infrastructure in Romania

The program aims at adapting agriculture to climate change and reducing its effects on agricultural production by rehabilitating the main existing irrigation infrastructure, consisting of base pumping stations, pumping stations, discharge pipelines, adduction channels, distribution channels and hydrotechnical constructions. The investment value for the period 2016-2020 is € 1.015 billion for an area of 2.006.941 ha. In order to streamline the use of water for irrigation, other normative acts have been developed that regulate the organization of water

user associations for irrigation and the approval of measures to stimulate the growth of irrigated agricultural areas.

Investments in setting up / replacing table grape plantations are considered as eligible expenditure for EAFRD disbursement, these being covered by the National Rural Development Program (NRDP) 2014-2020 through sub-measure 4.1 Investments in agricultural holdings. In this context, but also for the development of Romanian vineyards, a series of expenditures have been foreseen to complement the ones supported by the National Support Program 2014-2018, whose financing is provided by the European Agricultural Guarantee Fund EAGF).

Also, through the 2014-2020 NRDP and sub-measure 4.2 - support for investments in the processing / marketing and / or development of agricultural products, investments in the production and marketing of wine products are considered eligible in the construction, expansion, modernization and endowment of the buildings of the processing units and those with the purchase, including the leasing of new equipments, installations, equipment and means of transport specialized for the purpose of collecting the raw materials.

Thus, in the current programming period, EUR 5.3 million were invested in wine cellar financing applications. Beneficiaries come from different parts of the country and their projects are aimed at investing in the construction of wine cellars, in constructions needed for new grape and / or winery processing plants, but also for winemaking and modernization of production equipment.

The representative projects as value, which are under implementation are:

SC ALIRA GRAND VINS SRL - located in the vineyard of Dobrogea Hills

The investment is intended for the establishment of the wine cellar and has a contracted public value of 2.5 million Euros.

JIDVEI CRAMA - located in the vineyard of the Transylvanian Plateau

The CRAMEI JIDVEI project in Alba County has a contracted public value of 1.5 million Euros and aims to modernize the technology to increase the production

capacity and increase the quality of the technological process and the resulting finished product with beneficial effects on the price-quality ratio, increasing thus the competitiveness of the products in the market.

In the same period, another 4 wine cellars have applied for the EAFRD funds , for projects with a total public value of more than EUR 1.3 million: CH Pietrosaratii SRL and SC Ferma Nicovani SRL from the wine region Muntenia Hills, Villa Veche Winery - Zarandului Hills and SC Ioana- Hort-Trans SRL - Danube Terraces.

During the 2007-13 programming period, the EAFRD supported investments in 46 wineries, for which 33.7 million (public value) was paid. Of these, 30 have accessed funds to set up new production capacities worth 26 million euros, while investments in the modernization of wine cellars amounted to 7.6 million euros.

2.3. Irrigation operation with low water consumption

In the National Support Plan 2014-2018, the implementation of the modernization program, part of the restructuring / reconversion measure, the installation of drip irrigation systems, eligible for financing, including for viticulturists who have accessed the restructuring / conversion measure of the vineyard plantations.

2.4. Financing climate change research

Within the Sector Research Program of the MADR and the National Plan for Research and Development, there have been and are financed research projects in the field of viticulture, which have as their theme the creation of drought-resistant genotypes, the use in the combination of grafting of rootstocks resistant to drought, the use of cultural practices to reduce water losses (composting, soil mulching, reduction of fruit load, structuring of livestock vegetation) and the use of low-water irrigation systems.

MADR will also fund such research in the future, given that in the new common agricultural policy, a special role is given to studying the impact of climate change on agricultural / wine-growing crops.

3. Other actions

In Romania, a strong focus has been put on promoting resource efficiency and smart, sustainable and inclusive growth in agriculture and rural areas, in line with

the objectives set out in the Europe 2020 Strategy. One of the tools available to Member States to achieve these objectives is the environmental and climate package of NRDP 2014-2020, addressing agri-environment and climate practices (Measure 10), organic farming (Measure 11) and areas facing natural constraints (Measure 13), these being implemented in Romania starting with 2015.

Distinguished colleagues allow me to conclude by thanking you and reiterating the opportunity to see us at the Global Agriculture and Food Forum in Berlin in January 2019 and thus through our actions to help solve the challenges facing the agricultural field.