



ACADEMIA DE ȘTIINȚE AGRICOLE ȘI SILVICE "GHEORGHE IONESCU-ȘIȘEȘTI"  
INSTITUTUL NAȚIONAL DE CERCETARE-DEZVOLTARE PENTRU BIOTEHNOLOGII  
ÎN HORTICULTURĂ ȘTEFĂNEȘTI ARGEȘ

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## Expression of interest

### of National Research and Development Institute for Biotechnology in Horticulture Ștefănești - Argeș to join a Consortium on HORIZON EUROPE calls

#### Call - Fair, healthy and environmentally

HORIZON-CL6-2024-FARM2FORK-01-3: Thematic network tackling food fraud by translating research and innovation into practice

#### Organization details:

**Country:** Romania

**Name of the organization:** National Research and Development Institute for Biotechnology in Horticulture

#### **Contact person short description and contact details:**

Onache Petronela Anca is a chemist engineer, who works in the field of wine chemistry since 2006, and is a scientific researcher 3. The research activity consists in: the identification of vine genotypes for wine grapes that ensure economic and constant production quantitatively and qualitatively, under the conditions of the wine-growing area, determining their productive potential, in current climatic conditions; monitoring of phenological stages in vine genotypes according to climate change, in order to establish quantitative and qualitative parameters specific to the maintenance technology of the vineyard (observations, measurements, analyzes), in current climatic conditions. Tracking the evolution of qualitative indices in must (sugar content, acidity, glucose-acidimetric index, polyphenolic potential) and wine (alcoholic and polyphenolic potential, dry non-reducing extract, total acidity and residual sugar content). Determination of economic efficiency in genotypes studied according to the quantity and quality of production, in the context of changing climatic conditions. Identification and quantification of polyphenolic compounds in plant matter (strings), grapes, must, wine and waste from vinification. Capitalization of wine by-products, in the form of functional ingredients, for fortifying foodstuffs, in order to increase nutritional quality and antioxidant capacity. Increasing the added value of by-products from wine-wine technologies. Determination of the load of microorganisms on the surface of the grape, as well as must yeasts, useful in the process of fermentation of wine varieties. Obtaining and preserving pure yeast cultures of *Saccharomyces cerevisiae* and *non-Saccharomyces* for use in fermentation processes. Improving the quality of wines by directing fermentative processes with local levs. Development of improved winemaking biotechnologies by exploring the biodiversity of yeast in the local wine-growing area.

### **Short description of the organization**

The horticultural research activity started in Ștefanesti - Argeș in 1959 within the Ștefanesti Horti-Viticole Experimental Station. The research-development-innovation activity is continued today by the National Institute for Research and Development for Biotechnology in Horticulture Ștefanesti-Argeș (Institutul National de Cercetare-Dezvoltare pentru Biotehnologii in Horticultura, Ștefanesti-Argeș – INCDBH Ștefanesti-Argeș) an institution that carries out strategic, fundamental and applied research activities in the field of horticultural biotechnologies, in the field of improvement and vinification, including molecular biology research, *in vitro* clonal propagation, as well as genetic improvement through the use of *in vitro* techniques, being the only institution providing virus-free grapevine propagation material.

The research activity is carried out in 5 laboratories: Biotechnologies in horticulture, Breeding, genetics and molecular biology in horticultural species, Ecology and multiplication of horticultural species, Technologies - Plant protection - Virology in horticulture, and Oenology - Postharvest.

Having over 60 years of activity in horticultural research, INCDBH Ștefănești – Argeș:

- is the only one supplier of virus-free grapevine propagation material of the *Initial* category from Romania (G0);
- owns the national collection of grapevine virus-free germplasm;
- has breeding activity of horticultural species – table grapevine varieties, wine grapevine clones, tomato varieties;
- has a laboratory of physico-chemical analyzes on wines and by-products of vinification;
- leads molecular biology research: the use of genetic markers to determine the degree of similarity and/or variability; uniformity and genetic stability by molecular methods;
- biotechnologies of *in vitro* regeneration in grapevines, ornamental, aromatic and medicinal plants, and other species with restricted distribution areas;
- develops procedures for obtaining virus-free grapevine plants, innovative, precision technologies for horticultural species;
- makes research-development services in recognized laboratories: analyzes to determine the physico-chemical parameters of grapes, must, wine and alcoholic beverages; analyzes the stability of wines (protein, tartaric, oxidative); capitalization of wine by-products, in the form of functional ingredients, for fortifying food products, in order to increase the nutritional quality and antioxidant capacity;
- is a supplier of table and wine grapes, must, and different types of wine through its own store.

In order to solve the major problems of agriculture, to create a sustainable agriculture in the context of climate change, the institute cooperations within research projects with research units (institutes, stations) of horticultural profile, agronomic universities and farmers.

### **Possible main contributions of organization to the project proposal**

➤ Our institute intends to take part in the project as a task leader:

*Research:*

- Elementary profile investigation, polyphenolic, and mineral of wines in order to differentiate them according to their geographical origin and to control the practices of must enrichment in order to achieve traceability of the marketed wine.
- Monitoring of phenological stages in vine genotypes according to climate change, in order to establish quantitative and qualitative parameters specific to the maintenance technology of the vineyard (observations, measurements, analyzes), in current climatic conditions;

- Tracking the evolution of qualitative indices in must (sugar content, acidity, glucose-acidimetric index, polyphenolic potential) and wine.
- Determining economic efficiency in the genotypes studied according to the quantity and quality of production, in the context of changing climatic conditions.

*Development/Elaboration:*

- Elaboration of analytical methods in order to achieve a more complex compositional, polyphenolic, and mineral profile of wines, with particular emphasis on advanced analytical techniques and statistical tools to combat food fraud along the supply chain.
- Control by physico-chemical methods of framing within the limits imposed by the law and the norms of application of the law of vineyard and wine and European norms

*Analyzes:*

-Physico-chemical analyzes in grapes, must, wine, alcoholic beverages, and wine by-products (pomace and yeast); spectrophotometric analysis; microbiological and molecular analysis; potentiometric analysis.

-The activity of the enology laboratory is carried out based on research contracts within INCDBH Ștefănești but also has collaborations with other institutions or private persons.

*Services:*

-The determination of the physico-chemical parameters in grapes, must, wine, alcoholic beverages and wine by-products (pomace and yeast) is performed by methods: titrimetric, potentiometric, spectrophotometric, microbiological, etc.

### **Specific expertise relevant to the call topic**

#### **Publications on:**

-Study of the antioxidant properties of bioactive compounds in must, wine, and pomace:

<https://doi.org/10.3390/app13095722>

<https://doi.org/10.3390/separations9120395>

<https://www.usab-tm.ro/utilizatori/tpa/file/conferinta/2022>

<https://horticulturejournal.usamv.ro/index.php/scientific-papers/issues?id=810>

-Determination of wine falsification through studies and analyzes of its origin and DNA:

<https://doi.org/10.47191/ijmra/v5-i2-16>

[http://doi:10.15835/nbha\[12349\]](http://doi:10.15835/nbha[12349])

<https://horticulturejournal.usamv.ro/index.php/scientific-papers/issues?id=809>

<http://doi.org/10.51258/RJH.2020.14>

<http://horticulturejournal.usamv.ro/index.php/22-articles/articles-2020-issue-2>

<http://doi.org/10.51258/RJH.2020.02>

#### **Previous Projects**

► **NUCLEU Pogram 37N/2023-2026:** Improved varieties, technologies and biotechnologies to increase the added value of research and development results in horticulture (SORTBIOTEHNOHORT).

**Project 01.04** -Winemaking biotechnologies improved by exploring the biodiversity of yeast from the Ștefănești wine-growing area

► **ADER 6.5.2. Project/ 2023-2026:** Assessment of agrobiological features and oenological capacity of varieties with high nutraceutical value in order to increase the added value of wine products and by-products

► **Project no. 1203/27.02.2020** - Research on the behavior of vine genotypes for obtaining quality wines in the Ștefănești vineyard, in climatic conditions/2020-2024.

<https://incdbh-stefanesti.ro/cercetare/proiecte/asas-1203/>

► **Project PS no. 2.1.2. /2019-2020** - Research on the fortification of foodstuffs with functional ingredients obtained from wine by-products

<https://bioesurse.ro/blogs/proiecte/cercetari-privind-fortifierea-produselor-alimentare-cu-ingredient-e-func%C8%9Bionale-ob%C8%9Binute-din-subproduse-vinicole-2ps-212>

► **NUCLEU Program PN 19.30/2019-2022-** Biotechnologies for obtaining and controlling genetic resources of horticultural plants. (OMCSpCultSpon).

**Project PN 19.30.01.04** - Quantification of polyphenolic compounds for use as markers of authenticity and typicity of wines

► **NUCLEU Program 09.31./2016-2019**– Maintaining and characterization of the genetic resources of horticultural plants in order to effectively capitalize on their adaptive characters through complete services, in accordance with the requirements of the globalized economy (MCRGeHort).

**Project 01.05** - Defining the compositional, sensory profile and organoleptic characterization of wines obtained from clones approved by INCDBH Ștefănești

► **ADER 6.5.2. Project/ 2015-2018** - Diversification of the wine-growing assortment for table grapes and wine.

► **ADER 6.5.2. Project/ 2011-2014** - Studies and analysis for fundamenting viti-vinicultural sector decisions in implementing cap restrictions for the viti-vinicultural sector

### **Links to webpages of organisation and researchers:**

- INCDBH Stefanesti -Arges: <https://incdbh-stefanesti.ro/>;

- ERTIS: <https://eertis.eu/erio-2200-000j-4801>

-.linkedin.com/in/www.linkedin.com/in/anca-onache-8355

- Anca Onache (ResearchGate.net);

- Brain map: U-1700-035A-8929;

- ORCID ID: 0000-0001-6150-6775.