



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, Romania to join a Consortium on HORIZON EUROPE calls

HORIZON-CL6-2024-FARM2FORK-02-4-two-stage: Tackling outbreaks of plant pests

Organization details:

Country: Romania

Name of the organization: National Research and Development Institute for Biotechnology in Horticulture, Ștefănești Romania

Contact person short description and contact details:

Buciumeanu Elena-Cocuța, biologist, working in plant virology field starting from 1989, Scientific Researcher 1, research activity: complex study of grapevine in the presence of virus infection; virological analyzes of grapevine by ELISA; evaluation/monitoring of grapevine viruses in vineyards and grapevine growing regions in the country; virus -elimination; management of national research projects (3 national projects: NUCLEU PROGRAM/2016-2017, Project 01.03; Program BIOTECH, Project 053/ 2001-2004; INFRAS Program, Project 182/2003-2005; Project no. 1205/27.02.2020 (listed in the Previous projects section); member in research contracts (more than 20 national projects from which 12 are in the grapevine virology field); participation in proficiency tests with similar virology labs in Europe, starting from 2012, every two years (the proficiency tests were coordinated by Diagnostic and Analysis Laboratory DLR Rheinpfalz from Germany; participating laboratories were from Germany, Sweden, Italy).

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<https://www.brainmap.ro/elena-cocuta-buciumeanu;>

<https://www.webofscience.com/wos/author/record/ITU-8452-2023> (Web of Science ResearcherID: ITU-8452-2023);

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[https://scholar.google.com/citations?hl=ro&authuser=1&user=GDE82XoAAAAJ.](https://scholar.google.com/citations?hl=ro&authuser=1&user=GDE82XoAAAAJ)

Short description of the organization

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;
- leads molecular biology research: the use of genetic markers to determine the degree of similarity and/or variability; verification of identity, uniformity and genetic stability by molecular methods;
- biotechnologies of *in vitro* regeneration in grapevines, ornamental, aromatic and medicinal plants, other species with restricted distribution areas;
- develops procedures for obtaining virus-free grapevine plants, innovative, precision technologies for horticultural species;
- biodiversity (pests and flora) and climatic changes assessment and monitoring;
- alternative method utilization (with favorable impact on biodiversity) to combat pathogens and pests to ensure healthy horticultural productions;
- makes research-development services in recognized laboratories: virological analyzes of grapevines; analyzes to determine the physico-chemical parameters of grapes, must, wine and alcoholic beverages; analyzes regarding the stability of wines (protein, tartaric, oxidative).
- is a supplier of table and wine grapes, must, different types of wine through its own store.

Taking into consideration that our interest is focused on plant virology, we are interested in the biotechnology of *in vitro* regeneration (especially to develop the procedures for obtaining virus-free grapevine), virus detection method improving, monitoring the dangerous viruses/virus diseases in the horticultural crops.

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.

Over time INCDBH Ștefanesti has collaborated with various research organizations from Romania, such as: University of Pitesti, National Institute for Research & Development in Chemistry and Petrochemistry, “Horia Hulubei” National Institute for Physics and Nuclear Engineering, Valahia University of Targoviste, University of Agronomic Sciences and Veterinary Medicine of Bucharest, Research and Development Institute for Viticulture and Oenology Valea Calugareasca, National Institute of Research - Development for Potato and Sugar Beet Brașov, Esri Romania, Casa de Vinuri Ștefanesti SRL (Marcea), Beia Consult International SRL.

Possible main contributions of organization to the project proposal

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

Research: strategic, fundamental and applied research activities

- the impact of virus diseases in vineyards under climate change conditions;
- hyperspectral sensing technology for virus diseases detection;
- efficiency of virus elimination methods in grapevine and other horticultural plants.

The expected result of the project is to enhance the capacity to prevent, monitor and control of GPGV. That involves the survey also the mentioned viruses (GFLV, GLRaV1+3, GFkV) along with GPGV because frequently GPGV is found in combinations with other viruses. Such a situation that makes GPGV more difficult to eliminate in the case of grapevine sanitation of the varieties or clones of interest for propagation is required. The control of a virus is best achieved by using biological propagation material free of harmful viruses. The impact of the presence in vineyards of GPGV alone or in viral complexes under climate change conditions will be studied.

Development/Elaboration: virus elimination procedures;

Contributions to strategies: concerning the control of the virus diseases spreading in grapevine, by updating the list of pathogens that affect the quality of the viticultural propagation material (e.g., *Grapevine Pinot gris virus* (GPGV), having a high incidence in the viticultural countries of the world and it is not included in the pathogen list affecting the quality of grapevine propagating material, according with European legislation). The most important Romanian law that regulates the conditions for obtaining healthy grapevine is order no. 1267/2005 for the approval of the Rules and technical norms regarding the production with a view to commercialization, control, quality certification and commercialization of the material for the grapevine vegetative propagation. The legislation mentions the elimination of *Grapevine fanleaf virus* (GFLV), *Arabis mosaic virus* (ArMV), *Grapevine leafroll-associated viruses serotype 1 and 3* (GLRaV-1, GLRaV-3), *Grapevine fleck virus* (GFkV) from from the biological propagation material, but GPGV, identified in 2012, is not yet included.

Analyzes: diagnosis of plant viruses by ELISA, with commercial reagents.

- ▶ The virology lab of the institute can supply the biological material for virological studies (e.g., characterization of circulating viruses in Romania, having in view the control of virus spreading and the virus/virus diseases monitoring). INCDBH maintains a grapevine virus-infected collection used as reference material in our studies and in bilateral Proficiency tests.
- ▶ Services:
 - virological diagnostic by ELISA on different horticultural crops;
 - grapevine virus-free regeneration plant by *in vitro* chemotherapy (Patent).

Specific expertise relevant to the call topic

Team expertise

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Publications on:

- grapevines virus diseases monitoring - 4 works (e.g., Horticultural Science: Grapevine Pinot gris virus infecting grapevines in Romania - Short Communicaiton (agriculturejournals.cz);

- methods of grapevine virus elimination through *in vitro* chemotherapy, electrotherapy and combined methods – 25 works

(e.g., <http://www.rombio.eu/rbl1vol15Supplement/9%20Ionela%20Catalina%20Guta.pdf>;

<http://www.rombio.eu/rbl5vol16/9%20Guta%20Ionela.pdf>;

<http://www.notulaeobotanicae.ro/index.php/nbha/article/view/9227/7700>;

<https://doi.org/10.17660/ActaHortic.2017.1155.63>;

<https://doi.org/10.17660/ActaHortic.2017.1188.42>;

<https://doi.org/10.17660/ActaHortic.2019.1242.103>);

- the impact of virus diseases in vineyards under climate change conditions – 12 works (e.g.,

<http://www.revistadechimie.ro/pdf/GUTA%20I.pdf%208%2014.pdf>

<http://www.revistadechimie.ro/pdf/BUCIUMEANU%20E.pdf%2012%2014.pdf>

[Art15.pdf](http://www.usamv.ro) ([usamv.ro](http://www.usamv.ro));

- virus diagnosis - 8 works (e.g., <https://doi.org/10.17660/ActaHortic.2017.1188.41>

Microsoft Word - RJH 2022 vol 3 ds final 03profS - cristi 22.docx (romanianjournalofhorticulture.ro).

Previous Projects

The institute led and continues to lead national projects in the grapevine virology field, as follows:

► **NUCLEU Program PN 09 31/2009-2015** -Obtaining, controlling and exploiting the genetic resources of horticultural plants with high economic potential through the application of biotechnological methods.

Project 01.03 - Development of an alternative method of using electric current to obtain virus-free grapevine propagation material.

► **PN-II-PT-PCCA 104/2012-2016** Optimizing the virus elimination processes in horticultural plants through *in vitro* chemotherapy and electrotherapy, in order to comply with the EU requirements regarding the quality of the environment and agri-food products.

<https://incdbh-stefanesti.ro/cercetare/proiecte/pcca-tip-1/>

► **NUCLEU PROGRAM/2016-2017**– 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 01.03 Improvement of the ELISA serological method for the detection of grapevine viruses

Project 01.04 - Evaluation of some antivirals used in human medicine for the purpose of regenerating virus-free grapevine plants free from viruses/.

► **NUCLEU Program PN 18.40/2018** - Methods of obtaining, maintaining and characterizing of cultivated plant species and from spontaneous flora for the purpose of promotion on the domestic and international market (OMCSpCultSpon).

Project 01.02 Study on the maintenance of the "virus-free" phytosanitary status of grapevine regenerated by various virus-elimination methods.

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

Project 01.01 Investigations on the presence of a new virus, *Grapevine Pinot gris virus* (GPGV) in autochthonous viticultural material: diagnosis and elimination techniques.

<https://incdbh-stefanesti.ro/cercetare/proiecte/pn-19-30/>

► **RELANSIN Program**

Project 1014 /2001-2003– Improving the biotechnologies of *in vitro* virus elimination and multiplication of grapevine in order to increase the biological value of the viticultural planting material at the level of international standards.

► **BIOTECH Program**

Project 053 - Improvement of the methodology for early diagnosis of grapevine virus diseases/2001-2004.

► **INFRAS Program**

Project 182 - The use of current and perspective techniques for the diagnosis of grapevines virus diseases /2003-2005.

► **Project no. 1205/27.02.2020** - Maintaining the high biological value of conserved grapevine genotypes in the germplasm collection/2020-2024.

<https://incdbh-stefanesti.ro/cercetare/proiecte/asas-1205/>

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

Project 01.01 - Procedure for the elimination of Grapevine Pinot gris virus under conditions of economic efficiency, in order to increase the biological value of the viticultural propagation material

Patent:

Patent no.123133, 2010, Procedure for obtaining virus- free grapevine; holder INCDBH Ștefănești-Argeș, inventors Guță Ionela-Cătălina, Buciumeanu Elena-Cocuța.

Links to webpages of organisation, department, unit

Links

Organization webpages: <https://incdbh-stefanesti.ro/>

Technologies – Plant Protection – Virology in Horticulture

- <https://incdbh-stefanesti.ro/cercetare/laboratoare-de-cercetare/tehnologii-protectia-plantelor-virologie-in-horticultura/>
- <https://eertis.eu/erlb-2300-000e-0198>