

# "WILD GRAPEVINE IN ROMANIA *DISTRIBUTION AREA, MORPHOLOGICAL AND BIOCHEMICAL CHARACTERIZATION*"

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# The presence of wild grapevine in Romania

- *Vitis sylvestris* (wild grapevine) is a very vigorous creeper/climbing plant with polygamous-dioecious flowers and producing small, tart berries (5–7 mm diameter) and short-jointed seeds.
- It can be found sporadically in forests, up to 1500–1800 m altitude, and mainly along the Danube River; blooms in May-June (Ștefan & Oprea 2007).
- In Romania, the wild species of *Vitis* were briefly studied, especially from a botanical point of view, in 1931 and 1966 by Pop and Teodorescu.
- The detailed description of these plants and also the first conservation attempt of *Vitis vinifera* ssp. *sylvestris* from the southern part of Romania in the Germplasm Collection was described by Popa *et al.* (2009).
- Later, Popescu *et al.* (2013) introduced a number of 11 accessions into the Germplasm Collection of our institution; all the new accessions were maintained in *ex situ* collection and were ampelographic described.

# The germplasm collections in Romania

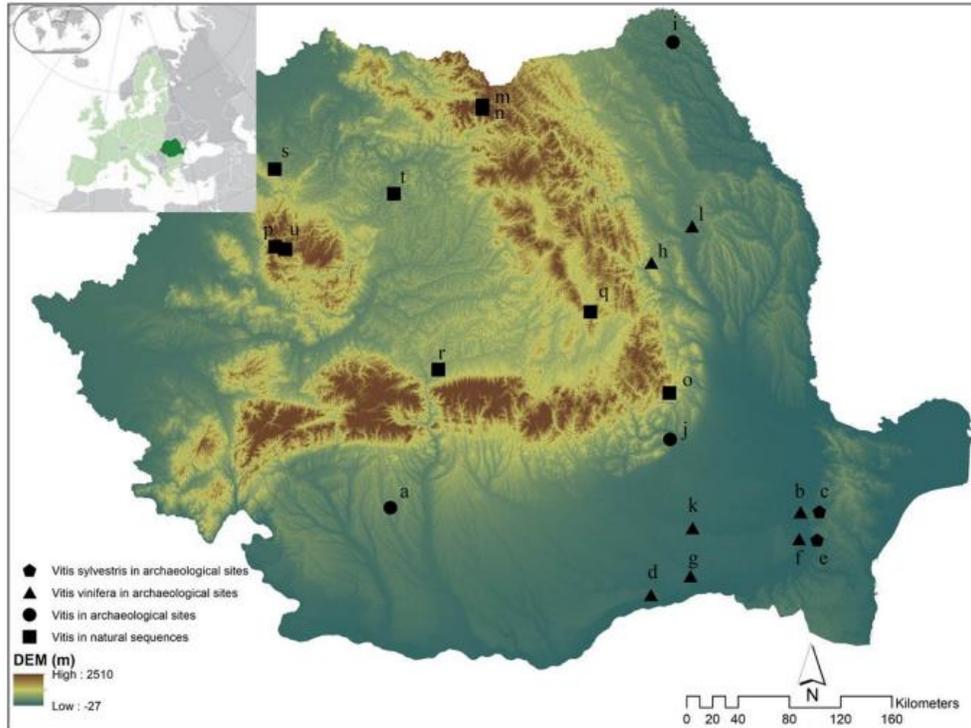
- ❑ **4 Universities** with agricultural profiles (USAMV Bucharest, University of Craiova, USAMV Cluj-Napoca, and USV Iasi) have germplasm collections with a small number of vine varieties; the plant material is used for research and education activities;
- ❑ **9 R&D units** (institutes and research stations) with viticultural profiles, which have collections with a large number of varieties and use the genetic material as the control in research projects, for vinification and exchange of planting material with similar units in the country and abroad ( Blaj, Bujoru, Dăbuleni, Drăgășani, Murfatlar, Odobești, Pietroasa, Ștefănești, Valea Călugărească).

*\*Not all of these centers have the Vitis Sylvestris in Germplasm Collection*

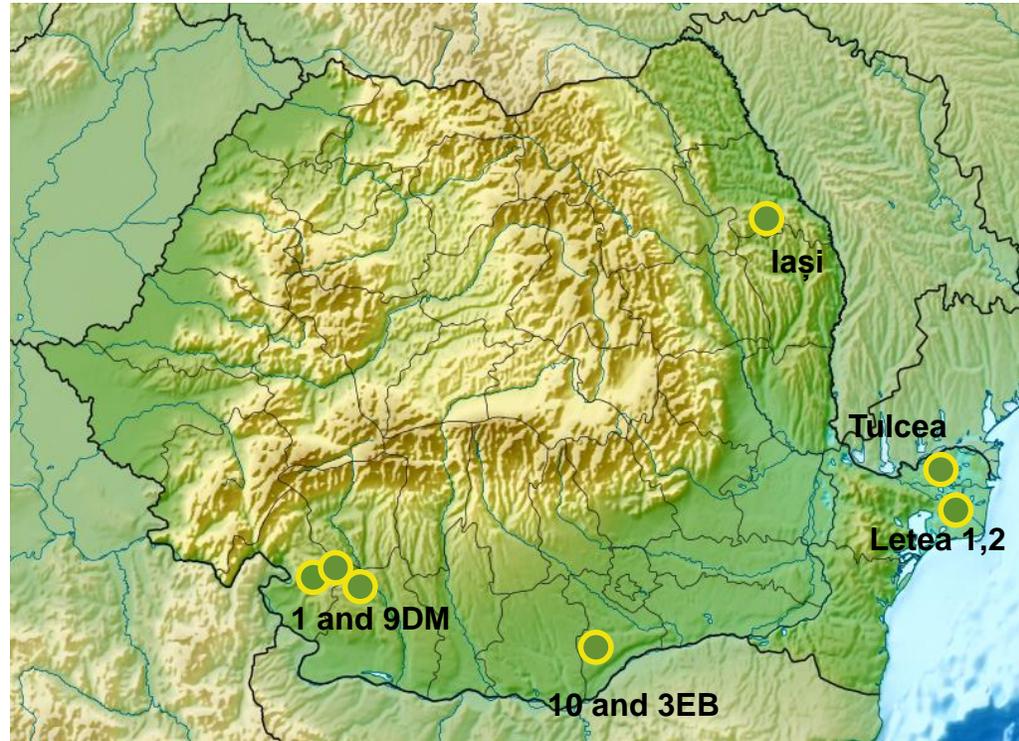


# Distribution area of *Vitis vinifera* subsp. *sylvestris* in Romania

- In Romania the wild grapevine was briefly studied over time
- Collection and preservation of *Vitis vinifera* subsp. *sylvestris*



Recordings of *Vitis*, *Vitis vinifera*, and *Vitis sylvestris* in archaeological sites and natural sequences of Romania

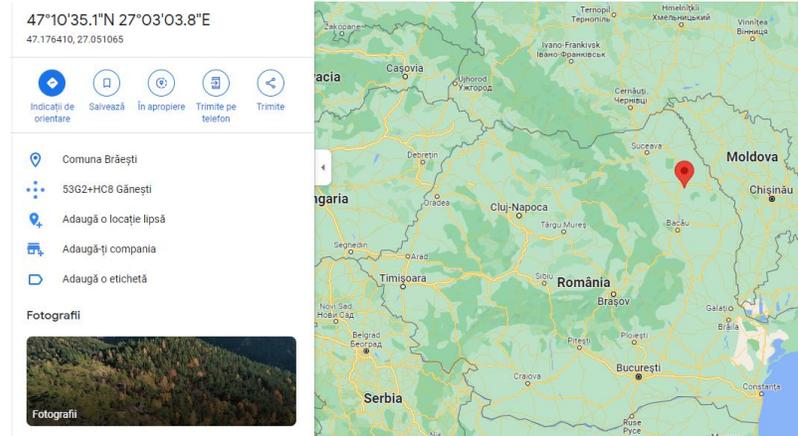


Collecting plant material from wetlands and forests along the Danube River

# Examples of recording GPS coordinates from *Vitis Sylvestris* samples collection sites

Plants from	9 different individuals	2 different individuals	5 different individuals
Location	Stârmina Forest	Hinova	Greaca
Geographic coordinates	Long. E	Long. E	Long. E
	22° 46' 14"	22° 46' 36"	26° 20' 21"
	Lat. N	Lat. N	Lat. N
	44° 30' 01"	44° 32' 26"	44° 6' 33"
Mean altitude (m)	118	100	60

Sampling locations and number of analyzed wild populations, preserved in the Stefanesti germplasm collection



*Vitis Sylvestris* geographic coordinates from Iasi  
 47°10'35.1"N 27°03'03.8"E  
 47°14'18.3"N 27°13'34.7"E

<b>Hinova 1</b>	44.5162337, 22.775629	ⓧ
	Hinova, Romania	
<b>Hinova2</b>	44.524439, 22.777012	ⓧ
	DN56A 6, Hinova 227245, Romania	
<b>Hinova3</b>	44.5162337, 22.775629	ⓧ
	Hinova, Romania	
<b>Hinova4</b>	44.5015506, 22.7747698	ⓧ
	DN56A, 227245, Romania	
<b>Hinova5</b>	44.5479217, 22.7678023	ⓧ
	DN56A, Hinova 227245, Romania	

*Vitis Sylvestris* geographic coordinates from Craiova, Dolj

## ❖ About samples of *Vitis Sylvestris* collected, preserved and possible to be used in this project

- ❖ The NRDIBH Stefanesti – Arges. In 2012, were collected the first plant materials from protected areas. Currently, are preserved in our *ex situ* collection 11 accessions of *Vitis sylvestris* harvested from five different locations in Romania along the Danube River (from Cazane to the Danube Delta).
- ❖ The University of Craiova – maintained 5 accessions collected from the South-West area of Romania (Craiova, Dolj).
- ❖ “Iasi University of Life Sciences” collected samples from 5 different locations on the territory of two counties in the South-East and in the North-East of Romania
  - 3 of the samples were also collected from the Danube Delta area (Macin, Tulcea)
  - 2 of the samples were collected from the North-East of Romania - around Iasi County.
- ❖ The plant material was harvested from the mentioned areas as wood canes, used for vegetative propagation to obtain plants which were preserved into Germplasm Collections for next research studies.

## Studies developed over time in Romania for *Vitis Sylvestris*

- Ampelographic descriptions according to OIV;
- Biometric and morphological aspects of the seeds;
- Biochemical studies regarding total acidity and sugar content of must;
- Studies on flower morphology and cytological aspects of pollen grains;
- Studies on salt tolerance under *in vitro* conditions and on potted plants.



# Some images of *Vitis Vinifera* ssp. *sylvestris* from different cultivation areas

*Ex situ* conditions



*Vitis sylvestris* – **year I in greenhouse**: to obtain plants from harvested canes, tested them to be virus-free, evaluation of their morphological features.

*In situ* conditions



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# *Vitis sylvestris* in protected areas



Plants as woody lianas that climb using leaf-opposed tendrils, or as '*pioneer plants*' crawling on the sand

# Ampelography descriptions were applied to characterize 8 accessions of *Vitis sylvestris* collected from 3 different wild areas (Hrinova-Cazane, Greaca and Letea Forest, Romania)

OIV-001 opening of the shoot tip



Vs10 G



Vs Letea 1



Vs3eb G

OIV-051 color of young leaf



Vs3eb G



Vs Letea 1



Vs9dm H

Mature leaf: size (065), shape (067), number of lobes (068), etc.



Vs6 S



Vs9 G



Vs9dm H



Vs12 G



Vs14 G



Vs Letea 2

Bunch: size (202), compactness (204), color of skin (225), etc.



Vs3eb G



Vs14 G



Vs10 G



Vs Letea 2

# Conclusions and Perspectives

- ✓ Considering that wild grapevine populations are present in certain ecosystems and that their habitat is endangered due to reducing the protected areas, to the enlargement of agricultural surfaces, or the extend of surfaces taken under-construction with different purposes, collecting the wild grapevine individuals (with male, and functional female flowers) and their preservation in *ex situ* collection **is a priority**.
- ✓ For the populations of *Vitis sylvestris* found on the territory of Romania, studies for their correct identification and characterization **are necessary to prove** their authenticity as *Vitis sylvestris*, or as of interspecific hybrids.
- ✓ The observations made in our collection proved that *Vitis sylvestris* plants and their grapes do not show symptoms of severe infections/attack caused by different pathogens, in comparison to *Vitis vinifera* plants.
- ✓ In the context of climate change, these accessions of *Vitis sylvestris* represent a valuable plant material and gene pool for future sustainable breeding and improvement of grapevine (genes involved in different biotic and abiotic stress resistances, or response to nutritional deficiencies, in synthesis of secondary metabolism compounds), or even their use as rootstocks.



**THANK YOU**