



SYLVESTRIS

INCREASING THE EFFICIENCY OF CONSERVATION OF
VITIS SYLVESTRIS GENETIC RESOURCES IN EUROPE

Erika Maul and Franco Röckel

Kick-off e-meeting

17 March 2023, 12:00



Sylvestris

Increasing the efficiency of conservation of *Vitis sylvestris* genetic resources in Europe

- *Vitis sylvestris*-populations in the European *Vitis* Database
- „Sylvestris consortium“ aiming investigation of genetic diversity of the wild grapevine

Outcome of InWiGrape-Project (2016)

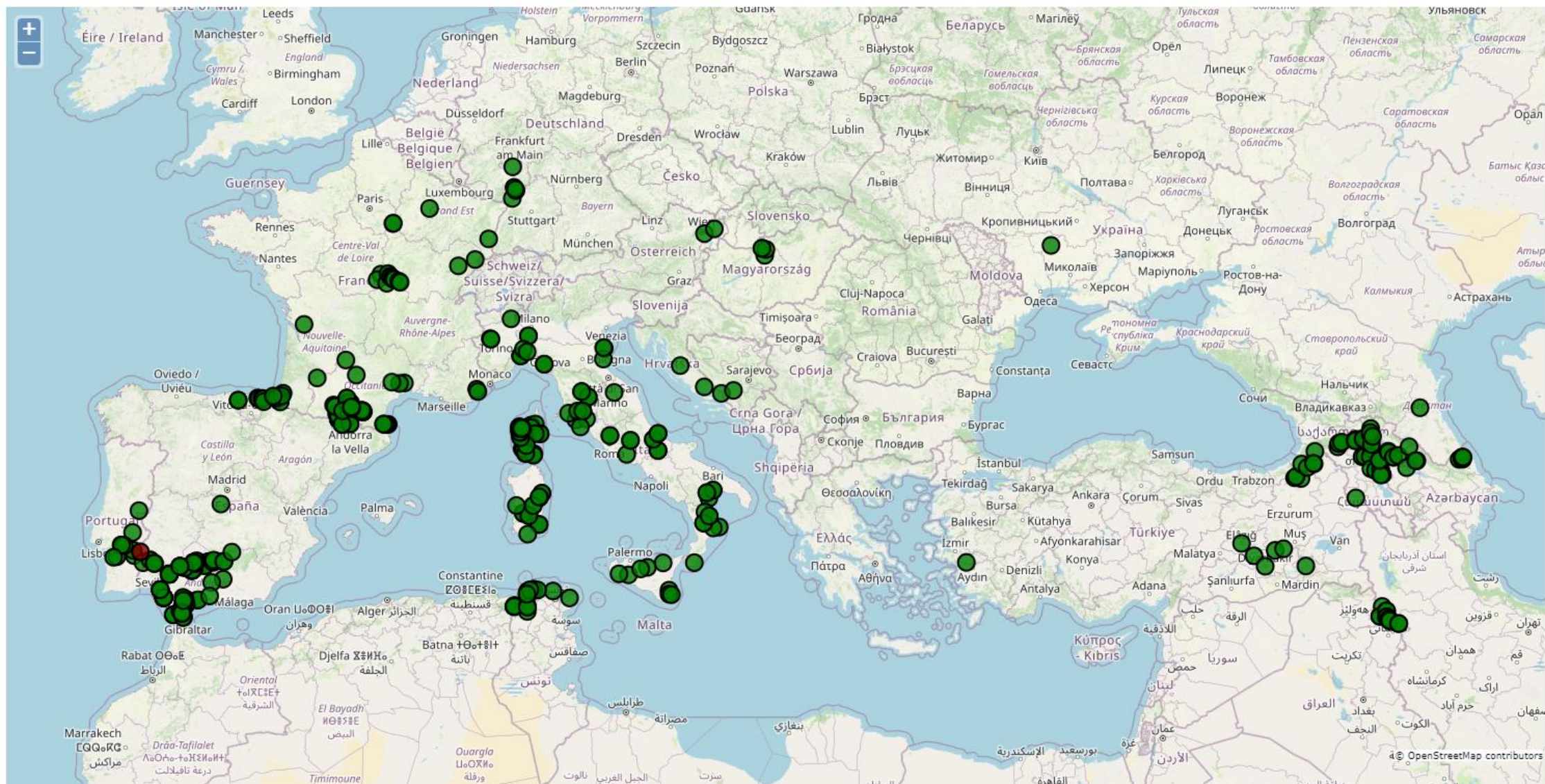


The European *Vitis* Database



Public access | *Vitis sylvestris* locations

- Users handbook
- SQL table scheme
- Public access
 - Quick search
 - Advanced search
 - Photo search
 - Characterisation data
 - SSR-marker data
 - Virus data
 - Catalogue of varieties
 - On farm maintenance
 - Vitis sylvestris* locations
 - AEGIS-European Collection
- Contributors of data
- Descriptors/file formats
- Institute codes
- Important links
- Contact
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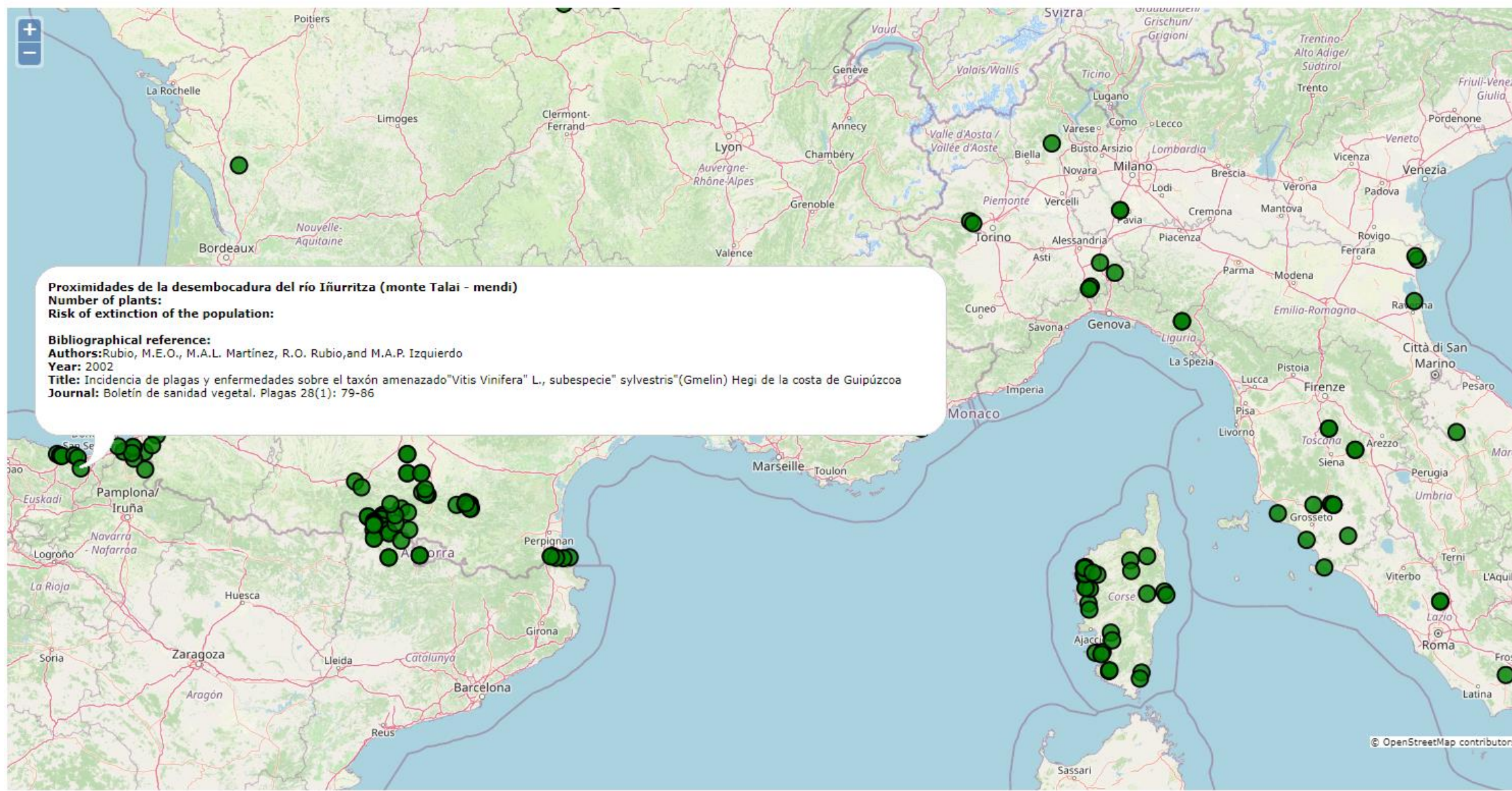
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Outcome of InWiGrape-Project (2016)



The European *Vitis* Database

Public access | *Vitis sylvestris* locations



Outcome of InWiGrape-Project (2016)



The European *Vitis* Database

INSTCOD	POPNU	ACC	ORIGC	COLLSITE-	70	LATITUDE-	LONGITU	ELEVATI	COLLDES	NumbPla	NumbFe	NumbM	PresSativ	PresVitis	Distance	PopSt	PopRisk	PopJus	PopSour	LandOwner-	inventor	
E- 6	MB- 15	ENA	TY- 10	characters	7	DE- 8	ON- 9	ON- 9	CR- 150	nts	male	ale	a		Other	atus		tif- 255	ce- 255	255	Zeichen	y_year
characte	rs	ME- 50	charac		characters	characters	characters	rs	rs									Zeiche	Zeichen			
DEU098	Hoerdt		DEU	East from the village Hoerdt	490904N	082200E		100		2	0	2	0	0	0	1	7		DEU494	State of Rhineland-Palatinate	2010	
DEU098	Ketsch		DEU	In the neighbourhood of the village Ketsch on a Rhine-Island, 3 km from Speyer	492202N	0083120E		95		80	0	0	0	0	2500	5	5		DEU098	State of Baden Württemberg	2010	
DEU098	Reißinsel		DEU	In the neighbourhood of the village Mannheim on a Rhine-Island	492715N	082650E		95		3	2	1	0	0	0	1	7		DEU494	State of Baden Württemberg	2010	

The European *Vitis* Database

Login [Case sensitive!]

User name:

Password:

B : Descriptors for characterisation

- Primary and secondary descriptors : tabular listing and single descriptors
- File format for descriptor recording
- Descriptors of SSR-markers (OIV801-OIV806)
- Detailed SSR-marker specific information
- File format for SSR-marker recording

B2 : Descriptors for phenotyping

- Guide to phenology recording from bud swelling to end of leaf fall
- File format for phenology records
- Guide to recording berry enocarpological traits
- File format for enocarpological records
- Article about enocarpological traits

C : Virus status

- Guidelines for Elisa test
- File format for virus status recording

D : On farm evaluation

- Section 1 - General description of the cultivar
- Section 2 - Vineyard general description
- Section 3 - Ampelography
- Section 4 - Agronomic features
- Section 5 - Enological features
- Section 6 - Wine tasting results

E : *Vitis sylvestris* populations/ plants

- [Protocol for the inventory of *Vitis vinifera* L. subsp. *sylvestris*](#)
- [Vitis sylvestris populations](#)
- [Vitis sylvestris plants](#)

F : Specific descriptor search option

Note : use the list fields to select the search criterion (download all descriptors: **OIV**).

All groups
Berry
Bunch
Datum
Flower
Growth
Mature leaf
Phenology
Shoot
SSR-marker

B. Complementary descriptors for the evaluation of preservation status



<p>NumbPlants: number of plants observed in the population</p>
<p>NumbFemale: number of observed male plants</p>
<p>NumbMale: number of observed female plants</p>
<p>PresSativa: number of <i>V. vinifera</i> subsp. <i>sativa</i> near the population Examples: 0 ; 5</p>
<p>PresVitis: number of other <i>Vitis</i> species near the population Examples: 0 ; 3</p>
<p>DistanceOther: If there are other <i>Vitis</i> species or <i>vinifera</i> near the population, the distance from the nearest wild grapevine will be indicated in meters.</p>
<p>PopStatus: status of the population. For each site, the Partner will evaluate as very good (9), good (7), regular (5), bad (3) or very bad (1). <i>For a good preservation of the population the presence of a minimum number of male and female plants is needed. In this first step of GrapeGen06, each Partner will evaluate the populations using their own criteria. In the following step, when we have to consolidate the evaluations of all the populations, we will define homogeneous criteria for all the European populations. The absence of male or female plants is enough to consider the state of preservation of the population as very bad.</i> Example: 3</p>
<p>PopRisk: Finally, the Partner will indicate the risk of extinction of the population as very high (9), high (7), medium (5), low (3) or very low (1). Example: 5</p>
<p>PopJustif: Justification of both status and risk of extinction of the population. Example: Not enough female. Highway project in 2 years closed to the site.</p>
<p>LandOwner: Owner of the land. Example: Private ; State ; Communal ; District</p>



Outcome of InWiGrape-Project (2016)



The European *Vitis* Database

Partner specific access – protected data

INSTCOD	POPNU	ACC	ORIGC	COLLSITE-	LATITUDE-	LONGITU	ELEVATI	COLLDES	NumbPla	NumbFe	NumbM	PresSativ	PresVitis	Distance	PopSt	PopRisk	PopJus	PopSour	LandOwner-	inventor	
E- 6	MB- 15	ENA	TY- 10	characters	7	DE- 8	ON- 9	CR- 150	nts	male	ale	a		Other	atus		tif- 255	ce- 255	255	Zeichen	y_year
characte	rs	ME- 50	charac		characters	characters	rs	rs									Zeiche	Zeichen			
DEU098	Hoerdt		DEU	East from the village Hoerdt	490904N	082200E	100		2	0	2	0	0	0	1	7		DEU494	State of Rhineland-Palatinate	2010	
DEU098	Ketsch		DEU	In the neighbourhood of the village Ketsch on a Rhine-Island, 3 km from Speyer	492202N	0083120E	95		80	0	0	0	0	2500	5	5		DEU098	State of Baden Württemberg	2010	
DEU098	Reißinsel		DEU	In the neighbourhood of the village Mannheim on a Rhine-Island	492715N	082650E	95		3	2	1	0	0	0	1	7		DEU494	State of Baden Württemberg	2010	

Outcome of InWiGrape-Project (2016)

INSTCODE- 6 characters
POPNUMB- 15 characters
ACCENAME- 50 characters
ORIGCTY- 10 characters
COLLSITE- 70 characters
LATITUDE- 7 characters
LONGITUDE- 8 characters
ELEVATION- 9 characters
COLLDESCR- 150 characters
NumbPlants
NumbFemale
NumbMale
PresSativa
PresVitis
DistanceOther
PopStatus
PopRisk
PopJustif- 255 Zeichen
PopSource- 255 Zeichen
LandOwner- 255 Zeichen
inventory_year
remarks



Users handbook
SQL table scheme
GrapeGen06 access
COST FA1003 access
Partner specific access
Online working
Quick search
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Enocarpological data
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Vitis sylvestris populations
Photo search
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Logbook reporting
MCPD data import
SSR-marker data import
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Enocarpological data import
Phenological data import
Sylvestris populations import
Photo import
Virus data import
National Catalogues
Confidentiality agreement

Login successful

DEU098



GrapeGen06 and COST Action FA1003 | Partner specific access | *Vitis sylvestris* populations

Search criterion : all populations
Search result : 225 (1 -- 100)

Partner specific access

[Back to search form](#) [Previous page](#)

| [First](#) | [Next](#) | [Last](#) |

Collecting institute	Population number	Collection site	Country of origin	Number of plants	Population		Inventory year	Delete record
					status	risk		
AUT024	Lob 22	Lobau	AUSTRIA	2	5	1	2008	
AUT024	Lob 23	Lobau	AUSTRIA	2	5	1	2008	
AUT024	Lob 24	Lobau	AUSTRIA	3	5	1	2008	
AUT024	Lob 3	Lobau	AUSTRIA	2	7	1	2008	
AUT024	Lob 4	Lobau	AUSTRIA	1	7	1	2008	
DEU098	Ketsch	In the neighbourhood of the village Ketsch on a Rhine-Island, 3 km from Speyer	GERMANY	80	5	5	2010	
DEU494	Hoerdt	East from the village Hoerdt	GERMANY	2	1	7	2010	
DEU494	Reiðinsel	In the neighbourhood of the village Mannheim on a Rhine-Island	GERMANY	3	1	7	2010	
ESP080	BA-01	RIO ARDILA. CAMINO DE JEREZ (JEREZ DE LOS CABALLEROS)	SPAIN	6	3	5	2003	
ESP080	BA-02	LOS REMEDIOS (FREGENAL DE LA SIERRA)	SPAIN	7	3	5	2003	
ESP080	BI-01	URKIOLA (MAÑARIA)	SPAIN	4	3	5	2003	
ESP080	BI-BU-01	RIO CADAGUA (ALONSOTEGUI)	SPAIN	5	3	5	2003	
ESP080	BU-01	PEÑA ANGULO. REFUGIO (ARTZINIEGA)	SPAIN	4	3	5	2003	
ESP080	CA-01	EL CHORREADERO (PRADO DEL REY)	SPAIN	8	3	3	2003	
ESP080	CA-02	RIO MAJACEITE (EL BOSQUE)	SPAIN	10	5	3	2003	
ESP080	CA-03	MANANTIAL EL QUEJIGO (EL BOSQUE)	SPAIN	4	5	3	2003	
ESP080	CA-04	PANTANO DE LOS HURONES (PRADO DEL REY-ALGAR)	SPAIN	8	5	3	2003	
ESP080	CA-05	RIO TAVIZNA (UBRIQUE)	SPAIN	4	5	3	2003	
ESP080	CA-06	PRADO DEL REY	SPAIN	3	3	3	2003	
ESP080	CA-08	AMBICIONES (EL BOSQUE)	SPAIN	7	5	3	2003	
ESP080	CA-09	RIVERA MILLAN (UBRIQUE)	SPAIN	8	7	3	2003	
ESP080	CA-10	RIVERA DE BARRIA (UBRIQUE)	SPAIN	3	5	3	2003	
ESP080	CA-11	LA ALGAIDA (SANLÚCAR DE BARRAMEDA)	SPAIN	4	3	7	2003	
ESP080	CA-12	LA PEGUERA (ALCALÁ DE LOS GAZULES)	SPAIN	8	7	3	2003	

Outcome of InWiGrape-Project (2016)



The European *Vitis* Database



GrapeGen06 and COST Action FA1003 | Partner specific access | *Vitis sylvestris* populations

Note: either chose option A or B.

A : Accession table listing

Listing of the complete table of *Vitis sylvestris* populations studied.

B : Specific search *Vitis sylvestris* populations

Note: use the list fields to select the search criteria.
Use % as wildcard at the beginning of a keyword for searching for the word with multiple beginnings.

Population number	<input type="text"/>
Collecting institute	<input type="text" value="DEU098"/>
Country of origin	<input type="text"/>
Number of plants	<input type="text"/>
Population status	<input type="text"/>
Population risk	<input type="text"/>

EU.Vitis - Copyright JKI © 2007

- Users handbook
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 - Virus data
 - Logbook reporting
 - MCPD data import
 - SSR-marker data import
 - Characterisation data import
 - Enocarpological data import
 - Phenological data import
 - Sylvestris populations import
 - Photo import
 - Virus data import
- National Catalogues
- Confidentiality agreement

Login successful
DEU098



- Users handbook
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Login successful
DEU098

Upload of *Vitis sylvestris* populations data

For data upload the use of the file format to be found via [Descriptors/file formats](#) - *Vitis sylvestris* populations is obligatory.

Note: Data will be overwritten if the population number is identical. Data of new populations are added.

1. Upload your excel file here

2. Your uploaded file: (first 10 rows)

3. save into database
or cancel upload

„*Sylvestris* consortium“ aiming
investigation of genetic diversity of
the wild grapevine
within and between geographic areas

***Vitis sylvestris* workshop**
29.11. – 1.12.2022

Julius Kühn-Institut
Institute for Grapevine Breeding Geilweilerhof

Gabriella de Lorenzis, Valérie Laucou, Kristina Margaryan, Georgios Merkouropoulos,
Javier Tello, Goran Zdunic, Franco Röckel, Erika Maul



Objectives of the study

- Identification of true *Vitis sylvestris*
- Exclusion of feral types and hybrids
- Preservation of true *Vitis sylvestris*

- Establishment of a *Sylvestris* SSR-marker data base for further investigations

- Analysis of genetic diversity, population structure and differentiation of populations
- Inference of putative dispersal routes from East to West and after last glacial period

via

- 20 nuclear microsatellites

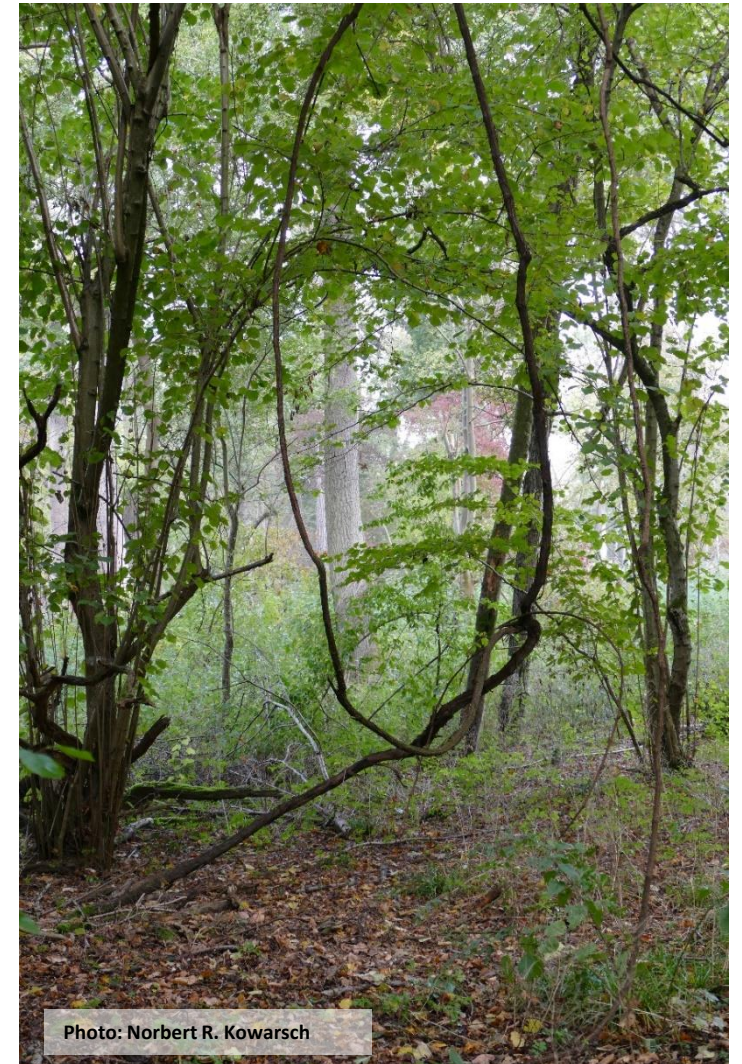


Photo: Norbert R. Kowarsch

Vitis 56, 127–131 (2017):

Guiding principles for identification, evaluation and conservation of *Vitis vinifera* L. subsp. *sylvestris*

Exclusion of feral types and hybrids

Avoidance of non-*sylvestris* genotypes in the data set

Hybrids were detected via non-*sylvestris* alleles and discarded

VVMD5: 254, 266, 268




























VVMD7: 231

VVMD25: 237

etc.

Hybrid samples showed non-*sylvestris* alleles on most loci.

Table
Minimal check list of OIV descriptors for morphology evaluation of *Vitis sylvestris* individuals in the wild

1 st screening: <i>Vitis vinifera</i> or other <i>Vitis</i> sp.		Expression level for <i>V. vinifera</i> L.
	OIV001 Young shoot: opening of the shoot tip	Always full open
	OIV012 Shoot: density of erect hairs on internodes	None or very low
	OIV016 Shoot: number of consecutive tendrils	Always 2 or less
	OIV051 Young leaf: color of upper side of blade (4 th leaf)	Often green or yellow
	OIV076 Mature leaf: shape of teeth	Never sharp teeth's (one side concave, one side convex)
	OIV078 Mature leaf: length of teeth compared with their width	Never very long or very short
	OIV084 Mature leaf: density of prostrate hairs between main veins on lower side of blade	Rarely none or very low
	OIV452 Leaf: degree of resistance to <i>Plasmopara</i>	Always none or very low
	OIV455 Leaf: degree of resistance to <i>Oidium</i>	Always none or very low
	OIV461 Degree of tolerance to <i>Phylloxera</i> (leaf)	Often high
2 nd screening: subspecies <i>vinifera</i> (<i>sativa</i>) or <i>sylvestris</i> ?		Expression level for <i>sylvestris</i>
	OIV151 Flower: sexual organs	Always dioecious
	OIV074 Mature leaf: profile of blade in cross section	Often flat or revolute
	OIV076 Mature leaf: shape of teeth	Often both sides straight
	OIV078 Mature leaf: length of teeth compared with their width	Often short to medium
	OIV079 Mature leaf: degree of opening / overlapping of petiole sinus	Always open
	OIV082 Mature leaf: degree of opening / overlapping of upper lateral sinus	Always open
	OIV085 Mature leaf: density of erect hairs between the main veins on lower side of blade	Often low
	OIV087 Mature leaf: density of erect hairs on main veins on lower side of blade	Often low
	* Colors of leaves in autumn	Always anthocyanin coloration
	OIV204 Bunch: density	Never dense
	OIV220 Berry: length	Always very short
	OIV223 Berry: shape	Always round (obloid, globose)
	OIV225 Berry: color of skin	Always blue black
	OIV236 Berry: particular flavor	Always none
	OIV242 Berry: Length of seeds	Often very short
	OIV243 Berry: Weight of seeds	Always very low
	* Length of seed beak compared with whole seed length	Always short beak

¹Expression level for *Vitis vinifera* L. and *sylvestris* estimated as most frequent notation.

* Characteristics not included in OIV Descriptor List.

Data sources / contributors

19 countries

≈ 2400 individuals

Countries	approximate no of samples	Authors
Armenia	150	Riaz et al. 2018 / Margaryan et al. non published yet
Austria	350	Maul et al. non published yet
Azerbaijan	330	Riaz et al. 2018
Bosnia&Herzegovia, Croatia, Slovenia	100	Riaz et al. 2018 / Zdunic et al. 2020
Cyprus	190	not yet analysed
France	115	Riaz et al. 2018; Dong et al Science 2022; André, les nouvelles archives de la flore Jurassiennes et du nord-est de la France, 15,2017; Barnaud et al HERIDITY 2010
Georgia	70	Imazio et al. 2013 / Riaz et al. 2018
Germany	80	Maul et al. not published yet
Greece	52	Merkouropoulos et al. not published yet
Israel	120	Drori et al. 2017; Rahimi et al. 2021
Italy	110	Gabriella de Lorenzis and Giacomo Pellisetti
Italy	15	Anna Schneider
Italy	111	Emanuelli et al. 2013
Italy/Sicily	120	de Michele et al. 2019
Montenegro	55	Maras et al. 2020 --> Tello et al. non published yet
Portugal	60	Cunha et al. not published yet
Spain	134	Tello et al. not published yet
Spain	190	de Andres et al. 2011
Tunisia	30	Ghaffari et al. 2013 --> Tello et al. non published yet
Turkey	50	Uzun-not published
Total	2432	

Proposition

Addition of populations provided by new partners

→ Supplementary genetic fingerprints of further geographic areas would be great

Outcome is a joint publication

Thank you for your attention