

Research Note

Wild grapevine populations in the Ossa-Morena mountain range (Portugal-Spain): Location, characterization and sanitary state

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Introduction: The wild grapevine, *Vitis vinifera* L. ssp. *syvestris* (Gmelin) Hegi, is considered to be an autochthonous and dioecious relative of European cultivated vines (HEYWOOD and ZOHARY 1995). Populations of wild grapevines still exist in diverse natural ecosystems of Central and Southern Europe, Northern Africa and Western Asia (ZOHARY and HOPF 1994). The constant destruction of wild vines by human beings, consequence of forest exploitations, public works and cultivation, has been outlined by LÓPEZ *et al.* (2001).

ARNOLD *et al.* (1998) has revealed the worrying situation of wild grapevines in alluvial and colluvial forests of Austria, Bulgaria, France, Hungary, Italy, Romania, Spain, Switzerland and former Yugoslavia. Our observations during the last 10 years indicate that populations in Spain and Portugal are constantly dwindling due to the shortage of a legislation intended for their specific conservation.

Grapevine cultivars are part of the lowering of biological variability, thus the genetic base of natural selection has been dangerously reduced, increasing in an alarming way the vulnerability of cultivars to environmental changes and new parasites (ESQUINAS-ALCÁZAR 1993).

Our team produces a new cartographical survey of the populations in different parts of Ossa-Morena mountain range, more precisely in territories belonging to the Spanish provinces of Córdoba, Sevilla, Huelva (Andalucía) and Badajoz (Extremadura) and to the Portuguese region of O Alentejo, along 300 km. This Hercinian elevation includes very important vineyards belonging to the territories of Andalucía, Castilla-La Mancha, Extremadura and O Alentejo. Moreover it is one of the natural areas with the highest number of populations of grapevine in Southern Europe and, particularly, the Iberian Peninsula. In addition we have characterized their sanitary state and the ecological situation.

Material and Methods: The prospection to find wild grapevine populations was carried out from 1990 to 2000. All of them were located in sections of gallery forests growing on river banks. The main supporters of the vines were identified and soil profiles were classified following the FAO-ISRIC-ISSS (1998) criteria.

At bloom from May to June, the sex of the vines was determined. An abstract of the ampelographic characteristics of individuals following the IPGRI, UPOV and OIV (1997) code is shown in the Table.

In order to specify the phytophagous arthropods and pathogens affecting grapevines, roots were uncovered to a maximum depth of 50 cm and examined for the presence of phylloxera, fungi and nematodes. In the aerial part of each plant, the first 2 m of the stem and 50 leaves, chosen at random, from 10 shoots were observed.

To determinate the presence of Grapevine fanleaf virus (GFLV) Elisa test was made from three leaves of each plant, according to the procedure of GUGERLI *et al.* (1984).

Results and Discussion: The situation of the 20 populations found is shown in the Figure. The main supporters are *Alnus glutinosa* Gaertner, *Crataegus monogyna* Jacq., *Ficus carica* L., *Fraxinus angustifolia* Valh, *Nerium oleander* Vahl., *Olea europea* L., *Pistacia lentiscus* L., *Populus nigra* L., *Populus alba* L., *Quercus rotundifolia* L., *Retama sphaerocarpa* (L.) Boiss., *Rubus ulmifolius* Schott, *Salix alba* L. and *Securinega tintorea* (L.).

Soils, where the wild grapevine populations are growing, present a bare development and all the profiles have similarities and are classified as Eutric Fluvisols, developed on recent alluvial sediments, integrated by fragments from Palaeozoic rocks. A global, reduced description of vines is shown in the Table.

On roots no symptoms caused by phylloxera, no action of dagger and needle nematodes and no fungi causing root rot were detected. The main damages on the aerial part were caused on leaves by the erineum strain of *Colomerus vitis* (Pagenstecher) (Acari, Eriophyidae). In the external edge of the gallery forests some nests of *Tetranychus urticae* Koch (Acari, Tetranychidae) can be found and also imaginal and preimaginal stages of *Jacobiasca lybica* (Bergenin & Zanon) (Homoptera, Cicadellidae). Damages caused by this leafhopper are less important than those registered on cultivated vineyards, where the homopteran is becoming a serious pest; grapevines need several chemical treatments, with very irregular results (OCETE *et al.* 1999).

Bemisia tabaci Gennadius (Homoptera, Aleyrodidae) populations also found in the North of Spain (OCETE *et al.* 1997), were highest in the province of Cordoba between September and October, 2000, with more than 20 white flies per leaf.

Symptoms caused by powdery mildew, *Uncinula necator* (Schw.) Burr, are often observed on leaves, clusters and shoots in spring and summer. Also, some leaves with oil spots caused by downy mildew, *Plasmopara viticola* (Berk. and Curt.) Berk. and de Toni, are registered in almost all the populations.

On the other hand, no symptoms of GFLV, the main virus infection in all vineyards around the Ossa-Morena moun-

T a b l e
Ampelographic characteristics of wild grapevines found

| IPGRI Code number | | Female | Male |
|--------------------------------|--|----------------------------------|--------------------|
| Vegetative | | | |
| 6.1.3 | Young shoot: density of prostrate hairs on tip | 3 (sparse) | |
| 6.1.7 | Shoot: colour of ventral side of internodes (green and red striped) | 1 (completely green)-2 | |
| 6.1.16 | Young leaf: colour of upper surface (reddish) | 4 (yellow with bronze spots)-7 | |
| 6.1.22 | Mature leaf: shape of blade | 2 (wedge-shaped) | 3 (pentagonal) |
| 6.1.23 | Mature leaf: number of lobes | 1 (entire leaf) | 2 (three)-3 (five) |
| 6.1.24 | Mature leaf: anthocyanic coloration of main veins on blade upper surface | 1 (very weak)-3 (weak) | |
| 6.1.27 | Mature leaf: shape of teeth (both sides straight) | 1 (both sides concave)-2 | |
| 6.1.30 | Mature leaf: general shape of petiole sinus | 1 (very wide open)-2 (wide open) | 1 (very wide open) |
| 6.1.35 | Mature leaf: density of prostrate hairs between veins | 5 (medium)-7 (dense) | |
| 6.1.36 | Mature leaf: density of erect hairs between veins | 3 (sparse) | |
| Inflorescence and fruit | | | |
| 6.2.2 | bunch: size | 1 (very small)-3 (small) | |
| 6.2.3 | bunch: density | 1 (very loose)-3 (loose) | |
| 6.2.5 | berry: size | 1 (very small) | |
| 6.2.6 | berry shape | 4 (round) | |
| 6.2.8 | Berry: skin color | 6 (blue-black) | |

Note: in the case of the male description, only differential characters are included.

tain range, were found on shoots in the field. All ELISA tests were negative for this virus.

The list of pests and diseases affecting wild grapevines is very similar for European populations (OCETE *et al.* 2000). Levels of infestation and infection are quite different, within the same site, from one plant to the other. Together with morphologic differences, these vines demonstrate a high genetic diversity, which is the key to avoid genetic erosion, to start pest and disease resistance breeding programs and to restore the riverbank forests.

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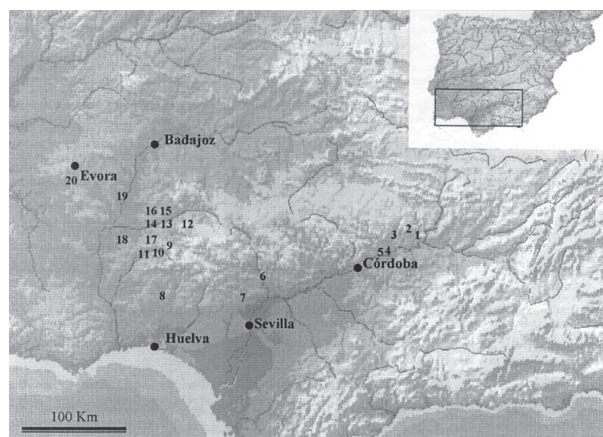


Figure: Figures indicate location of wild grapevine populations in the Ossa-Morena mountain range (Portugal-Spain).

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