

Sélection Oppenheim 4



Genetic origin

This variety results from the crossbreeding of *Vitis berlandieri* and *Vitis riparia* derived from Euryale Ressaygues.

Name of the variety in France (and usual name)

SO 4

Breeder/breeder and year obtained

Sigmund Teleki and Heinrich Fuhr, 1896.

Estimated surface area of the French vineyard grafted with this rootstock and main regions of use

180 000 ha . SO 4 is found in all French wine-growing areas.

Elements of ampelographic description

The identification is based on:

- the tip of the young shoot that is half opened, with a piping anthocyanin coloration and a medium density of prostrate hairs,
- the bronzed young leaves,
- the elongated shoots, with a ribbed surface, a slightly elliptic section, shiny red nodes and internodes with reddish spots on the ventral side and no erect and prostrate hairs,
- the trifid tendrils,
- the large, wedge-shaped, involute, adult leaves, with an undulate leaf blade between the veins, an open U- or V-shaped petiole sinus, teeth with straight sides, a weak anthocyanin coloration of veins, and on the lower side of the leaves, a low to medium density of erect hairs,
- the male flowers,
- the dark brown woody shoots.

Evolution of cultivated areas in France

Year	1945	1955	1965	1975	1985	1995	2005	2015
ha	0.8	27	363	821	512	339	461	370

Genetic profile

Microsatellite	VVS2	VVMD5	VVMD7	VVMD27	VRZAG62	VRZAG79	VVMD25	VVMD28	VVMD32
Allele 1	143	234	233	238	200	252	238	214	259
Allele 2	145	263	264	249	214	256	249	235	259

Resistance to soil pests

SO 4 is highly tolerant to the root form of phylloxera. Its resistance to *Meloidogyne incognita* and *Meloidogyne arenaria* nematodes is also very good. It is moderately tolerant to *Meloidogyne hapla* nematodes.

Aptitudes for vegetative multiplication

SO 4 wood production is very good (60 000 to 100 000 m/ha) with sometimes however a certain proportion of dry canes. It reacts well to fertilization and irrigation but the canes lignify fairly late. This rootstock has very good cutting and grafting capacities, and is easy to clean and disbud. Its internodes have a medium size diameter and the growth of lateral shoot buds is limited. When performed, hormoning should be moderate and the duration of stratification may sometimes be longer.

Clonal selection in France

In France, the 24 certified SO 4 clones carry the numbers 5, 15, 18, 20, 72, 73, 74, 102, 103, 104, 106, 156, 157, 158, 159, 161, 165, 166, 174, 203, 204, 205, 761 and 762. Among those, the clones multiplied are:

- clone No. 5: 47 ha 25 ares of mother vines producing certified material, in 2017,
- clone No. 18: 5 ha 15 ares of mother vines producing certified material, in 2017,
- clone No. 20: 1 ha 60 ares of mother vines producing certified material, in 2017,
- clone No. 72: 1 ha 27 ares of mother vines producing certified material, in 2017,
- clone No. 73: 65 ares of mother vines producing certified material, in 2017,
- clone No. 74: 82 ares of mother vines producing certified material, in 2017,
- clone No. 102: 46 ha 33 ares of mother vines producing certified material, in 2017,
- clone No. 104: 50 ares of mother vines producing certified material, in 2017,
- clone No. 157: 84 ares of mother vines producing certified material, in 2017,
- clone No. 161: 50 ares of mother vines producing certified material, in 2017,
- clone No. 203: 22 ha 07 ares of mother vines producing certified material, in 2017,
- clone No. 204: 89 ares of mother vines producing certified material, in 2017,
- clone No. 205: 62 ares of mother vines producing certified material, in 2017,
- clone No. 762: 226 ha 16 ares of mother vines producing certified material, in 2017.

Datas are extracted from: Les chiffres de la pépinière viticole, 2017, Datas and assesment of FranceAgriMer, may 2018.

Bibliographic references

- Catalogue des variétés et clones de vigne cultivés en France. Collectif, 2007, Ed. IFV, Le Grau-du-Roi, France.
- Documentary collections of the Centre de Ressources Biologiques de la Vigne de Vassal-Montpellier, INRAE - Montpellier SupAgro, Marseillan, France.
- Cépages et vignobles de France, tome 1. P. Galet, 1988, Ed. Dehan, Montpellier, France.

Adaptation to the environment

SO 4 resists up to 35% of "total" limestone, 17% of "active" limestone and an ICP of 30. Its resistance to iron chlorosis can thus be considered as moderate. It is well suited to acidic soils and it is fairly tolerant to chlorides. SO 4 resistance to drought is moderate to high but its adaptation to humidity is low to medium. This rootstock is sometimes sensitive to tylosis. SO 4 poorly absorbs magnesium and promotes the dessication of the stems. It is well suited to sandy soils (provided that the magnesium deficiency is corrected), plains terroirs and clay-limestone soils that are moderately or not very fertile. However, it does not seem adapted to very dry terroirs, that induce chlorosis as well as too compact soils.

Interaction with the graft and production objectives

Generally speaking, SO 4 is quite compatible with grafts but the radial trunk growth is very limited. It is said that this rootstock has a "thin leg" which may create substantial diameter differences with the grafts and the requirement for trellising. The growth speed of plants grafted onto SO 4 is very high and the vigor conferred to the grafts by this rootstock is strong, particularly during the first part of the vine's life (the first 15 years). The varieties grafted onto SO 4 produce high yields, starting from the first years after planting which sometimes requires thinning. SO 4 induces good sugar content in the fruits, the wines obtained often lack body and sometimes have herbaceous notes due to the high yields. SO 4 also promotes wines with high pH levels.



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