

Julius Kühn Institute Institute for Grapevine Breeding Geilweilerhof

New grapevine varieties Catalogue

Diversity – Basis for New Varieties

Scientifically prepared information -Facts against an unchecked flood of information

VITIS - Journal of Grapevine https://ojs.openagrar.de/index.php/VITIS

an international journal in the fields of biology, molecular biology and breeding of grapevine, viticulture, enology and related topics

VITIS International Variety Catalogue https://www.vivc.de/

a comprehensive database of passport, primary and secondary descriptor data and images of grapevine varieties and Vitis species in grapevine collections or literature

European VITIS Database

http://www.eu-vitis.de/index.php

a database with information on grapevine accessions in European gene banks

Deutsche Genbank Reben

https://www.deutsche-genbank-reben.julius-kuehn.de/

a German network of gene banks and toolfor the conservation of genetic resources

VITIS-VEA

https://www.vitis-vea.de/

a scientific literature database in English in the field of viticulture. It contains practice-relevant literature in German since 1994.

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Planting material can be obtained from vine propagation companies/vine nurseries

Publisher

Julius Kühn Institute Federal Research Institute for Cultivated Plants (JKI) Institute for Grapevine Breeding Geilweilerhof 76833 Siebeldingen zr@julius-kuehn.de www. julius-kuehn.de

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Cover image by Julia Schwab on Pixabay (www.pixabay.com) Institute for Grapevine Breeding Geilweilerhof

used icons

https://www.flaticon.com; Anja Wolck

Layout

Anja Wolck, Central Data Processing, AG Print and Online Media

ISBN

978-3-95547-110-1

DOI

10.5073/20220608-083244

Date

Juni 2022

https://www.julius-kuehn.de/zr https://www.julius-kuehn.de

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Grape varieties - cultural heritage for generations

Today, new grapevine varieties have a hard time: they are unknown, rare in today's jungle of wine shelves, in need of explanation, and something for specialists, for discoverers, for pioneers! But Riesling started similarly centuries ago and today it is the great standard every new variety wants to come close to. However, today, other framework conditions exist in which grape varieties have to prove their potential: Climate change, new pests and pathogens, environmental concerns and conservation of resources, cost pressure and preservation of the cultivated landscape. It will not be possible to fulfil the current demands by continuing with a "business as usual" approach. New, hardy grapevine varieties are very important and necessary for adaptation in viticulture. They require our attention and our pioneering spirit.



Prof. Dr. Reinhard Töpfer

Grapevine breeding is a task for generations and continuity is of utmost importance as the development of a new grapevine variety takes around 25 years. Fortunately, Germany can look back on very successful breeding programmes and is a pioneer of the development of new varieties in Europe. The varieties from Germany are appreciated all over Europe, although they have been bred for the cooler northern wine-growing climate. As a consequence, at the beginning of the millennium, important wine-growing countries such as France, Italy and others initiated their own breeding programmes, after new varieties had been frowned upon for decades. The growing national and international interest in new grape varieties is a confirmation of the persistent work of the breeders and at the same time the beginning of a paradigm shift. About 25 years after the breakthrough of grapevine breeding in Germany with the market launch of the first generation of fungus-resistant varieties - first and foremost REGENT - other varieties are now coming to the attention of winegrowers and consumers.

CALARDIS BLANC is such a new variety. It combines many desirable characteristics and will find its way to innovative and dynamic winemakers as well as to open-minded and curious wine consumers. CALARDIS BLANC, named after its traditional birthplace, Geilweilerhof (historically Gailhardsweiler or Calardiswilre, first mentioned in a document in 1184), shows a lively, fruity wine with very pleasant and subtle aromatic notes. For wine consumers, vinegrowers and nature, it offers a lot: very good wine quality combined with lightness.

Grapevine breeding at Geilweilerhof



View of the Geilweilerhof from the German Wine Route coming from Frankweiler (1956)

Grapevine breeding at the Geilweilerhof has a history of almost one hundred years and aims to develop resistant grapevine varieties (especially against downy mildew and powdery mildew). It is closely connected with the names Peter Morio, Bernhard Husfeld and Gerhardt Alleweldt. As early as in 1926, Peter Moriostarted with systematic grapevine breeding at the Geilweilerhof area, which has been consistently continued until today.

He already planted the first seedlings from crosses with resistant breeding strains at this time. Husfeld proved the combinability of resistance to the above mentioned diseases and high wine quality, and Alleweldt selected the first high-quality resistant varieties in Germany and brought them to the market. It is one of the longest lasting, continuous breeding programs for fungus-resistant grapevines in Europe.

In the course of this so-called "resistance breeding", naturally existing defence mechanisms against pests and pathogens from closely related wild grapevines are introduced into our susceptible European grapevine (Vitis vinifera ssp. Vinifera) through cross breeding. The combination of resistance of the wild species with the quality of the European vines has top priority. To achieve this goal, several crossing steps and selections of the best breeding lines over many years are necessary.



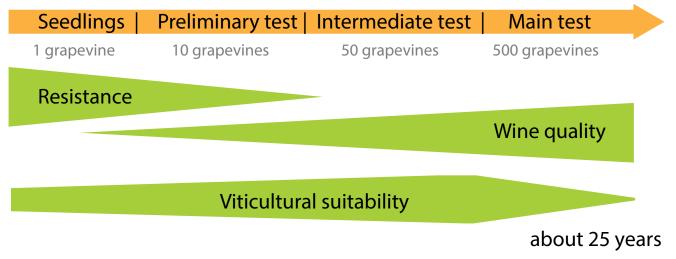
"Pollen house" in the vineyard at Geilweilerhof in Siebeldingen

Grapevine breeding at Geilweilerhof

The introduction of the so-called marker-assisted selection (MAS) for resistance from 2005 onwards has made this work more efficient. Today, pre-selection of combined resistances is state of the art and helps to increase the resistance level of the breeding material.

With the use of MAS, the breeding goal of durable resistance is now within reach. Nevertheless, these vines are not resistant and require moderate plant protection measures against a range of pests and pathogens, of which some are new. Nevertheless, these varieties are a crucial contribution to improving the environmental sustainability of viticulture. At the beginning of the 1990s, the first varieties from the resistance breeding programme at Geilweilerhof were approved by the Bundessortenamt and included in the national list of varieties. The various wine-growing regions promptly classified these varieties, making it possible to produce quality wine from resistant varieties in Germany.

The most famous example is the variety REGENT: After about 30 years of work selecting and testing from crossing (1967) to approval (1995) and classification (1996) it was shown for the first time that it was possible to create a red wine variety combining resistance and quality. Due to its high wine quality and its potential to save pesticides, REGENT quickly spread in viticulture and was cultivated on about 2,300 ha in Germany at its peak. With the fading of the red wine trend from 2005 onwards, the acreage reduced to around 1,750 ha (as of 2019) still planted with REGENT in Germany today and the variety is also successfully cultivated in other European countries.



Selection stages of vine breeding at Geilweilerhof

The selection of the new grapevine varieties takes place in four testing stages over a period of about 25 years (about 6 years per stage). Depending on the breeding stage, the focus is on different characteristics (selection criteria). From the beginning to the end, focus is on wine quality. The green colour indicates the selection intensity of the characteristics on the time axis.

Grapevinebreeding at Geilweilerhof

In the following years, the range of varieties from the Geilweilerhof was extended by various new cultivars that combined the hardiness of REGENT with new wine styles. VILLARIS and FELICIA, two highly interesting white grape varieties were created and REBERGER and CALANDRO are two new red varieties with unique characteristics: Wines from REBERGER are reminiscent of its 'father' LEM-BERGER; CALANDRO represents the strong, fruity and tannic red wine type of Southern Europe. In 2018, CALARDIS BLANC, a variety from the next generation of resistance breeding, obtained variety protection. The variety shows a high wine quality as well as improved resistance to downy mildew and a high botrytis resistance. Due to its rather late ripening; grape harvest can take place at a later date, which is of advantage as climate change forces winegrowers to earlier harvests.

Additionally, CALARDIS MUSQUÈ, which was recently applied for registration, captivates with a unique wine aroma and represents an extremely appealing speciality for friends of bouquet wines.



Terracotta plaque at the "Herrenhaus"

Abbreviations Resistance loci

Varieties from resistance breeding carry different resistances. The abbreviations stand for:

Run	Resistance to <i>Erysiphe necator</i> (Oidium, powdery mildew) also known as <i>Uncinula necator</i> ; source of run resistance = <i>Muscadinia rotundifolia</i>
Ren	Resistance to <i>Erysiphe necator</i> (Oidium, powdery mildew) Source of resistance = American Vitis species
Rpv	Resistance to <i>Plasmopara viticola</i> (downy mildew)
Rgb	Resistance to Guignardia bidwellii (black rot)

Legend Viticultural characteristics



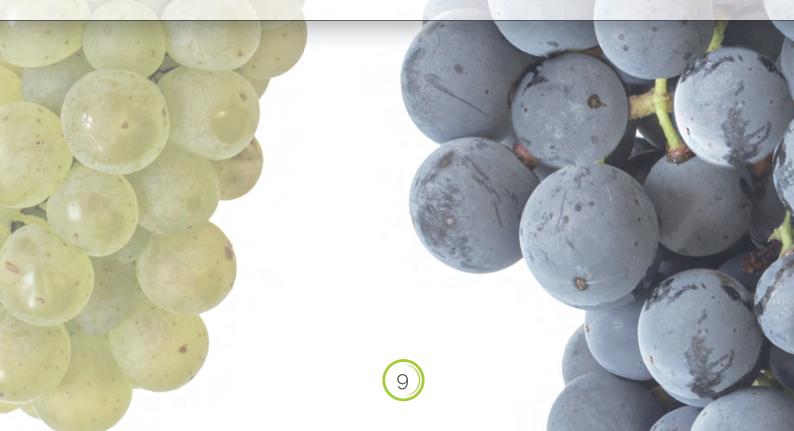
Growth characteristics

Cluster characteristics

Yield

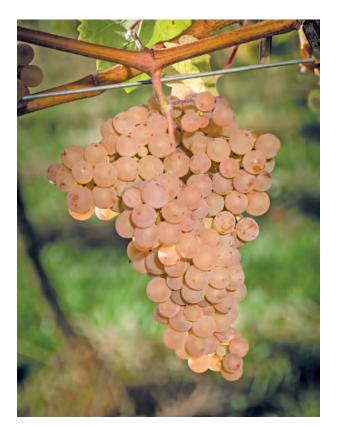
New grape vine varieties

GEILWEILERHOF





CALARDIS MUSQUÉ x SEYVE VILLARD 39-639



Resilience

powdery mildew downy mildew Botrytis black rot medium-high high medium-high medium-high

Known resistance loci

Ren3	Ren9	(powdery mildew)
Rpv3.1	Rpv3.2	(downy mildew)
Rgb		(black rot)

Variety development

1993	Crossing
2018/19	Grant of plant variety protection D / EU
2020	Registration in the national variety list

CALARDIS BLANC combines various resistances to powdery mildew, downy mildew as well as black rot with excellent cultivation properties.

Due to its upright growth and loose cluster architecture, it is a very user-friendly grape variety. It is also remarkable that the grapes of CALAR-DIS BLANC hardly exhibit sunburn damage even in very dry and hot years. As the variety has a moderate tendency to form double and side shoots, grape thinning may be necessary. A special feature of the variety is the colouring of the unshaded berries reminiscent of Muscat, while the back of the cluster often remains yellow-green despite ripening.

Enological potential

The wine possesses a finesse-rich aroma of passion fruit, blood orange and freshly cut apple



paired with a delicate, spicy bouquet and distinguishes itself from the competition.

The wine is characterized by tangy acidity, which also makes it suitable as base wine for sparkling wines.

CALARDIS BLANC





C = CALARDIS BLANC, R = RIESLING

Viticultural characteristics

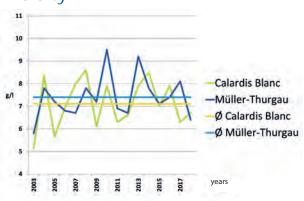
upright, low side shoot formation, slight tendency to double shoot formation

medium sized, loose structure, similar to Riesling

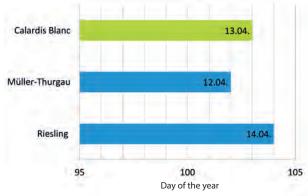


approx. 16 t/ha

Acidity

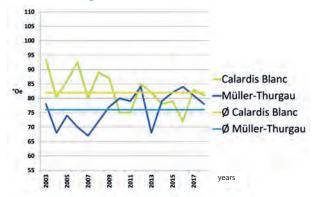


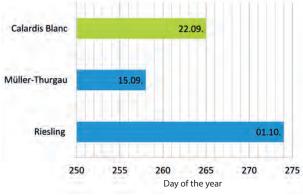
Bud burst (Ø 2014 - 2018)



Must weight

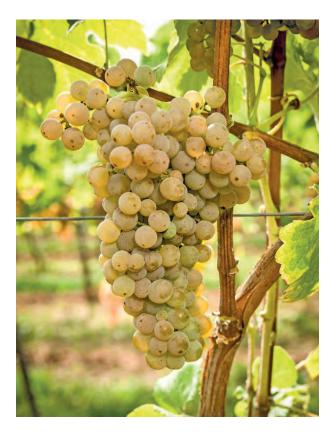
11







BACCHUS x SEYVAL



The white grape variety CALARDIS MUSQUÉ produces full-bodied wines with a unique, exotic bouquet. The variety tends to side shoot formation and to shed berries. Thus, CALARDIS MUSQUÉ is somewhat more demanding in cultivation than other new varieties. The increased effort in the vineyard is, however, rewarded by the high quality of the wines. At blind tastings at the Geilweilerhof the wines usually get the best ratings. If botrytis, which is rather rare with this variety, is present, it usually develops into noble rot. These characteristics paired with the lively acidity and the distinctive aroma make the variety also interesting for sweet wine specialties. The constantly high quality of the wines over the years is to be emphasized.

Resilience

powdery mildew downy mildew Botrytis black rot medium-high medium medium-high medium-high

Known resistance loci

Ren3	Ren9	(powdery mildew)
Rpv3.2		(downy mildew)
Rgb		(black rot)

Variety development

1964	Crossing
2018	Application for plant
	variety protection

Enological potential



Lively acidity and a pronounced muscat tone, sometimes reminiscent of Traminer, in combination with exotic aromas such as mango, passion fruit and gooseberry.



CALARDIS MUSQUÉ



C = CALARDIS MUSQUÉ, R = RIESLING

Viticultural characteristics

Viticultural characteristics

comparable to Riesling, small berries;

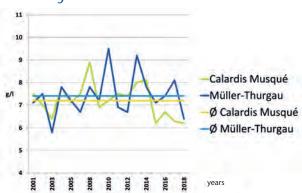
to be noted: Tendency to coulure and side shoot formation



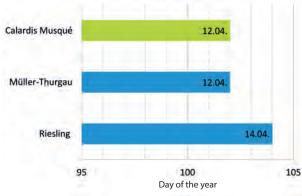
approx. 8 t/ha



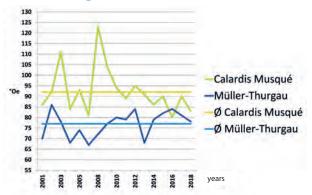
Acidity

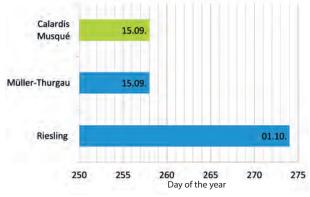


Bud burst (Ø 2014 - 2018)



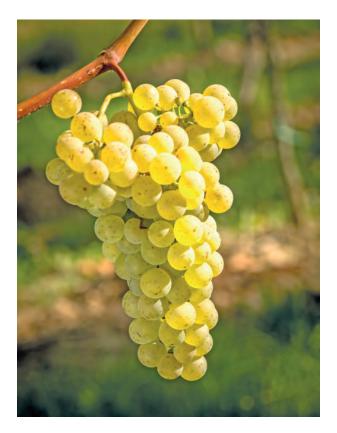
Must weight







SIRIUS x VIDAL BLANC



In the vineyards, FELICIA can easily be distinguished by its strikingly shiny leaves.

FELICIA typically has large and loose clusters, and the berries are also suitable for direct consumption. With three to four bunches per shoot, the variety has a relatively high yield level. Due to the loose grape structure, it is rather insensitive to botrytis. However, as growth its not quite upright, more work in the vineyard is required.

Due to the predominantly slender wine style, the variety is excellently suited as a blending partner for delicious cuvées.

Resilience

powdery mildew downy mildew Botrytis black rot medium-high medium medium-high medium-high

Known resistance loci

Ren3	Ren9	(powdery mildew)
Rpv3.1	Rpv3.3	(downy mildew)
Rgb		(black rot)

Variety development

1984	Crossing
2004	plant variety protection
2020	Registration in the
	national variety list

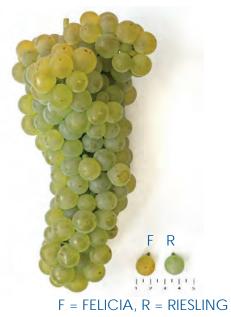
Enological potential



FELICIA stands for a light, fine-fruity wine type with a profound acidity. The bouquet is characterized by fine, floral and fruity aromas such as green apple, apricot and banana, which in some years are combined with a discreet, pleasant muscat tone. The wine also has a harmonic acidity.







Viticultural characteristics

vigorous, medium side shoot formation

also suitable for use as a house vine

comparable to Müller-Thurgau; large berries;

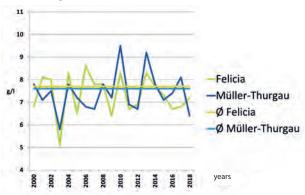


approx. 15 t/ha

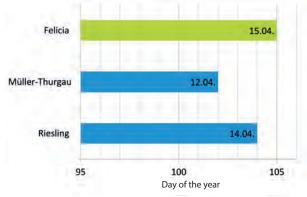




Acidity

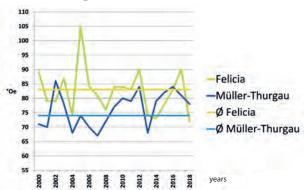


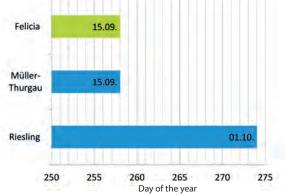
Bud burst (Ø 2014 - 2018)



Must weight

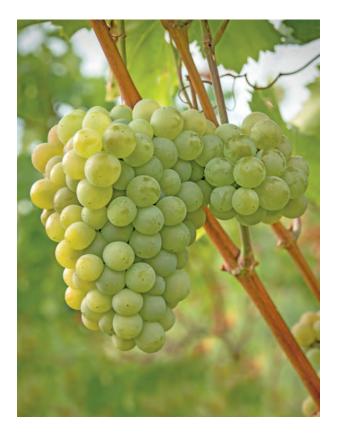
15







BACCHUS x VIDAL BLANC



PHOENIX is a white grape variety also suitable for direct consumption as table grape due to its aromatic taste and is therefore very popular as a house vine. It is also well suited and appreciated for the production of grape juice. Due to its early onset of ripening, it should be harvested in good time, as wet weather can cause grape berries to burst quickly. PHOENIX has a continuously high yield level. The grape variety grows upright with favourable wood ripening and shows high resistance to winter frost.

Resilience

powdery mildew downy mildew Botrytis medium-high medium medium

Known resistance loci



Ren9 (powdery mildew)

Rpv3.1

(downy mildew)

Variety development

1964	Crossing
1992	Plant variety protection
1992	Registration of the list of varieties

Enological potential



The wine is flavoured by discreet Muscat note. It is full-bodied and very balanced with its ripe acidity.







P = PHOENIX, R = RIESLING

Viticultural characteristics

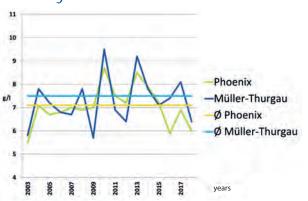
Viticultural characteristics

comparable to Müller-Thurgau; large berries

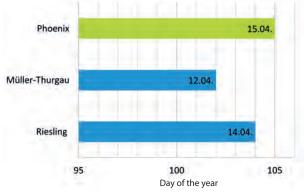


approx. 15 t/ha

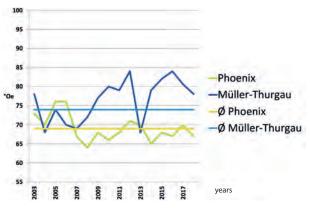
Acidity

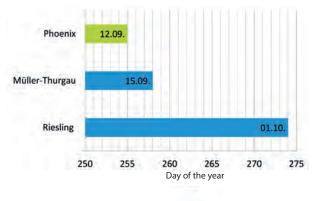


Bud burst (Ø 2014 - 2018)



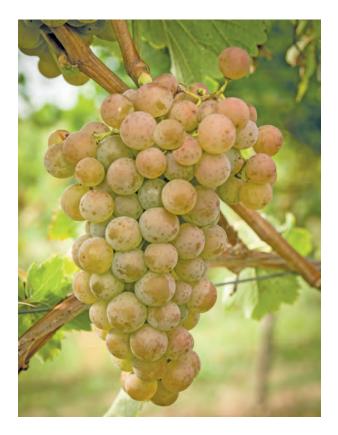
Must weight







SIRIUS x VIDAL BLANC



In the vineyard, VILLARIS is characterized by its vigorous, upright growth. The grapes are smaller than those of its sister FELICIA. They are often bronzed on the side facing the sun and consist of relatively large berries. The wood of VILLARIS is usually well matured.

The white wine variety shows two to a maximum of three bunches per shoot.

The wines produced from VILLARIS often have low acidity levels and thus, they are often reminiscent of Pinot Blanc wines. VILLARIS is described as an early ripening variety and on average it ripens a little earlier than Müller-Thurgau.

Resilience

powdery mildew downy mildew Botrytis

medium-high medium-high medium

Known resistance loci

Ren3	Ren9	(powdery mildew)
Rpv3.1	Rpv3.3	(downy mildew)

Variety development

1984	Crossing
2004	Plant variety protection
2011	Registration in the
	national variety list

Enological potential



The wines are often reminiscent in smell and taste of white Pinot wines with a mild appealing acidity.







Viticultural characteristics

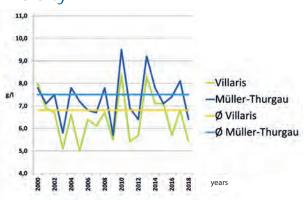
vigorous, low to medium side shoot formation

comparable with Müller-Thurgau; large berries

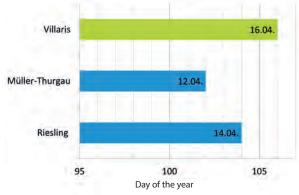


approx. 13 t/ha

Acidity

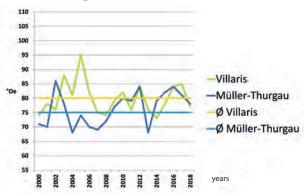


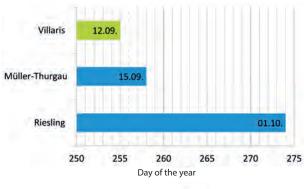
Bud burst (Ø 2014 - 2018)



Must weight

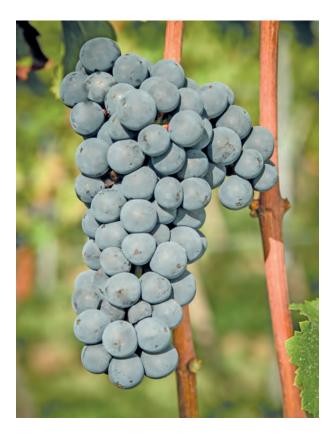
1C







DOMINA x REGENT



Resilience

powdery mildew downy mildew Botrytis medium-high medium low

Known resistance loci



Ren9 (powdery mildew)

Rpv3.1

(downy mildew)

Variety development

1984	Crossing
2009	Plant variety protection
	granted
2011	Registration in the
	national variety list
2009	Plant variety protection granted Registration in the

CALANDRO is characterised by its colour-intense red wines of high quality. It produces strong red wines characterized by a complex tannin structure.

With this Southern European style, which is achieved despite early maturity, the wine is well suited for aging in barrique barrels. Cultivation of CALANDRO is very uncomplicated due to its upright growth and the good wood maturity.

The resistance level as well as the ripening time are similar to its parent variety Regent.

Due to the compact grape structure, in years with high precipitation and critical locations, good ventilation of the canopy must be ensured.

Enological potential



It is a Mediterranean, rich and full-bodied type of wine and is characterized by berry aromas and smoky notes. The high tannin content requires a period of maturation. This gives it a long shelf life.







Viticultural characteristics

medium to vigorous, low side shoot formation

compact, medium grape weight approx. 150g



R

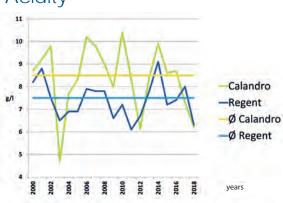
1,1,1,1,1,1

С

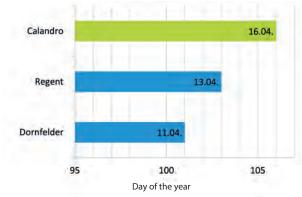
C = CALANDRO, R = RIESLING

approx. 14,5 t/ha

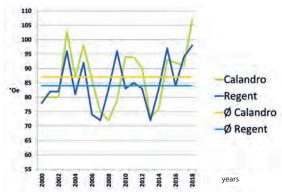
Acidity

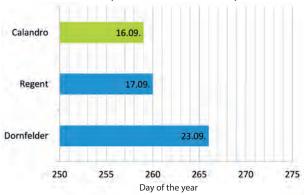


Bud burst (Ø 2014 - 2018)



Must weight







REGENT x LEMBERGER



REBERGER is a red grape variety that has high must weight and an intense colour combined with an early ripening time. The vines show upright growth and a good resistance to powdery mildew. The susceptibility to Peronospora in REBERGER is comparable to classical grape varieties. Therefore, intensive foliage treatment in the vineyard is required. Red wines made from REBERGER are full-bodied and smooth. The colour-intense wines remind of its 'father' Lemberger in terms of taste.

Resilience

powdery mildew downy mildew Botrytis medium-high low medium

Known resistance loci

Ren3

Ren9 (powdery mildew)

Variety development

1986	Crossing
2004	Grant of plant variety
	protection
2011	Registration in the
	national variety list

Enological potential



The wines are powerful and with well-integrated tannins. The bouquet of REBERGER is diverse. The fruity aromas are in the foreground and remind of sour cherry, plum, blueberry, elderberry and also raspberries. The tertiary aromas taste of vanilla, tobacco and cloves make an exciting wine. The taste of dark chocolate rounds it off.







Re= REBERGER, R = RIESLING

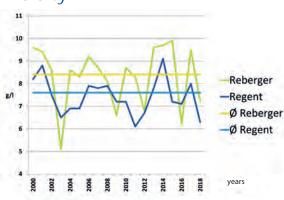
Viticultural characteristics

- medium to vigorous, low side shoot formation
- loose, medium grape weight approx. 120 g

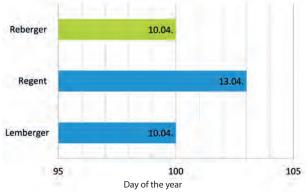


approx. 11 t/ha

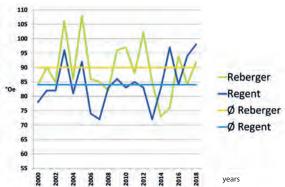
Acidity

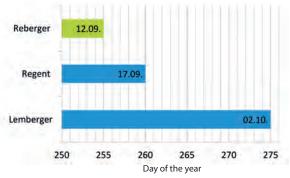


Bud burst (Ø 2014 - 2018)



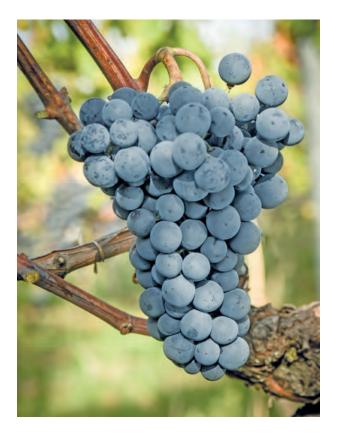
Must weight







DIANA x CHAMBOURCIN



REGENT was the first fungus-resistant grape variety that was widely cultivated in Germany. The mostly deep red color and the strong, velvety taste are typical characteristics of the red wine variety. REGENT is also very suitable for the production of rosé or sparkling wines. Due to its loose grape structure, REGENT is not very susceptible to botrytis. The variety has been used in many ways in grapevine breeding and is a parent of the varieties CALANDRO and REBERGER of the Institute for Grapevine Breeding Geilweilerhof.

Resilience

powdery mildew downy mildew Botrytis medium-high medium medium

Known resistance loci



Ren9 (powdery mildew)

Rpv3.1

(downy mildew)

Variety development

1967	Crossing
1994	Plant variety protection
	granted
1997	Registration in the
	national variety list

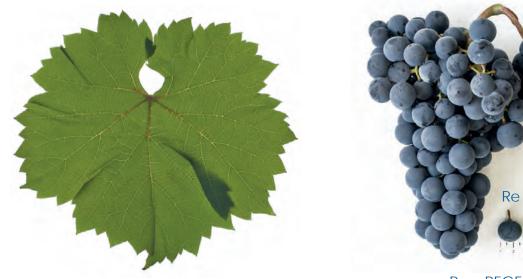
Enological potential



The deep dark red wines are full-bodied with a good balance of tannins and aromas and often remind of red wines of southern origin.

Characteristic for RE-GENT is the strong taste of dark cherries, blackberries, blueberries and cocoa.





Re = REGENT, R = RIESLING

1.11

R

Viticultural characteristics

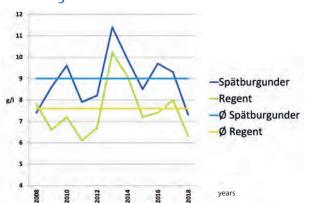
medium to vigorous, low side shoot formation

loose, medium grape weight approx. 130 g

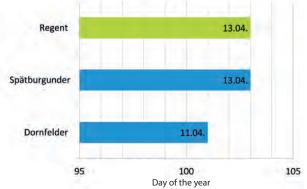


approx. 11,5 t/ha

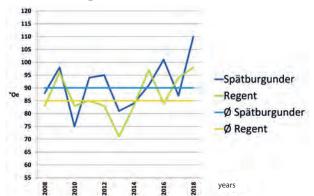
Acidity

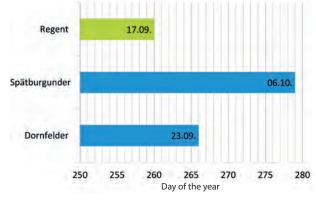


Bud burst (Ø 2014 - 2018)



Must weight







The two varieties ARTABAN and VIDOC were created in a cooperation between the Institute for Grapevine Breeding Geilweilerhof and the French grapevine breeders of INRAE. These two varieties were selected under the climatic conditions of Southern France and have been protected as European varieties since 2018.

ARTABAN

MTB 3082-1-42 x REGENT



Artaban - ©Inrae - C. Schneider

ARTABAN is a red wine variety with high resistance to Downy Mildew and very high resistance to Powdery Mildew. It has a high yield level and a medium vigorous growth with upright shoot growth. Young plants of this variety are quite sensitive to magnesium deficiency.

ARTABAN is suitable for the production of fruity wines with moderate alcohol content and good color intensity. The aroma is dominated by fruity notes. VIDOC

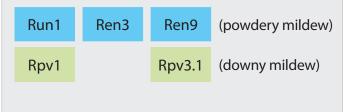
MTB 3082-1-42 x REGENT



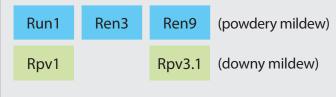
Vidoc - ©Inrae - C. Schneider

The red grapevine variety VIDOC is very resistant to Downy Mildew and Powdery Mildew. The variety has an above average yield level and a late ripening time. In the field, VIDOC shows vigorous growth with upright shoots. Nevertheless, a trellis system is recommended. The variety is not susceptible to botrytis. Full-bodied wines with intense color and high tannin content can be produced from VIDOC. The pleasant acidity gives them a good balance on the palate. The taste is complex and characterized by fruity and spicy notes.

Known resistance loci



Known resistance loci



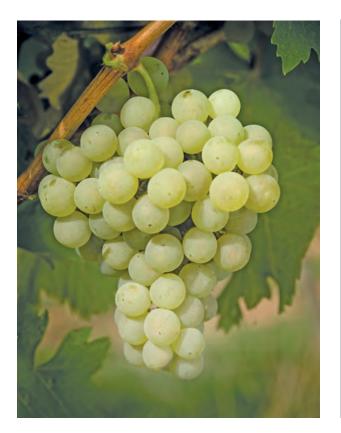
Classic Grape varieties

GEILWEILERHOF





(SILVANER x RIESLING) x MÜLLER-THURGAU



In 1933, the grape variety BACCHUS was crossed at the Geilweilerhof by Peter Morio and was finally registered in the German variety list in 1972. The white wine variety, which is named after the Roman god of wine BACCHUS, grows upright and has a good wood maturity.

On one hand, due to its thin berry skin, BAC-CHUS is quite sensitive to external influences, e.g. sunburn. On the other hand, however, BACCHUS is rather insensitive to frost.

Compared to other grape varieties, ripening starts rather early. In general, BACCHUS produces light wines with low acidity. The taste of these wines is often very fruity and slightly bouquetted. For breeding, BACCHUS was used as parent of the grape varieties PHOENIX and CALARDIS MUSQUÉ.





Viticultural characteristics

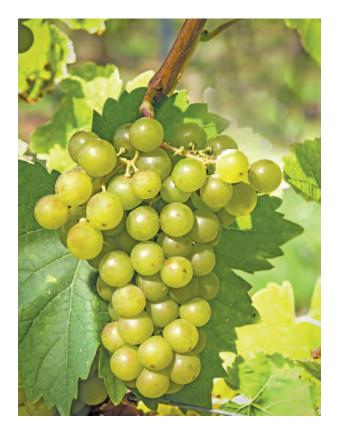
vpright
wright
small to

small to medium, compact

approx. 9 t/ha

MORIO-MUSKAT





The variety MORIO-MUSKAT is especially known for the distinctive bouquet of its wines. The name is based on its representative muscat note and its breeder Peter Morio. The white wine variety was crossed in 1928, the entry in the variety list followed in 1982. Due to the rather bushy growth and the very compact grape architecture, MORIO-MUSKAT is a very demanding variety in cultivation.

But early harvesting and good nutrient supply in the wine cellar can produce very interesting wines with strong muscat notes.

The typical aroma of the MORIO-MUSKAT is similar to the Muskateller and is reminiscent of lemon or elderflower. The wines are mostly characterized by a nice acidity.





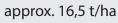
VI = VIORIO-IVIOSKAI, R = RIESLING

Viticultural characteristics



strong

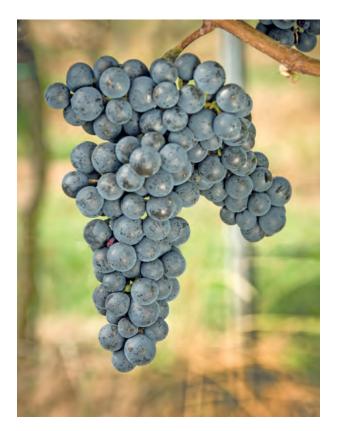
medium size, compact







BLAUER PORTUGIESER x SPÄTBURGUNDER



The red wine variety DOMINA was crossed by Peter Morio in 1927. It was registered in the German national list of varieties in 1974.

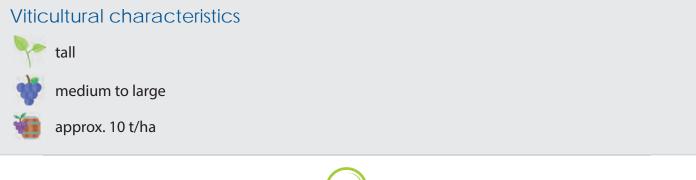
Compared to its parent Portugieser Blau, the grape cluster of DOMINA is looser, while the red wines are stronger. In the German winegrowing region Franconia DOMINA is very popular. The good wood maturity and the upright growth are positive characteristics for the cultivation of the variety. In addition, it is resistant to frost and shows medium-late ripeness. DOMINA produces colour-intense and full-bodied wines, with a taste characterised by blackberries and smoky notes.

As a parent of the CALANDRO grape variety, DOMINA was successfully used for breeding.





D = DOMINA, R = RIESLING



Notes

Notes













Breeding wine cellar

A somewhat different wine cellar for the evaluation of wines of breeding material. Due to the limited number of plants, breeding lines generally only produce small quantities of grapes. Thus, maturation in small vessels (1L to 100 L) is carried out ("microvinification").

-300)



Reference

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The Julius Kühn-Institut is an institution subordinated to the Federal Ministry of Food, Agriculture and Agriculture (BML)