‘Cerason’ Grape

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‘Cerason’ is an interspecific cultivar intended for the production of red and “rosé” wines. It is suitable for growing in ecologically friendly and organic viticulture (Fig. 1). ‘Cerason’ belongs to cultivars with enhanced resistance to fungal diseases. Its planting has increased in vineyards in the Czech Republic under organic viticulture conditions. It is well-adaptable to a wide range of growing conditions. The cultivar was named ‘Cerason’ because of its taste and aroma qualities, which are similar to the fruit of sweet cherry. The name ‘Cerason’ originates from the Latin botanical name *Cerasus avium*.

Origin

At the end of the 19th century, the most important fungal diseases and pests of grapevine in European vineyards were: downy mildew caused by *Plasmopara viticola* (Berk&Curt.) Berl. & De Toni, powdery mildew caused by *Erysiphe necator* Schwein, and grape phylloxera, *Dactulosphaira vitifoliae* (Fitch.). In 1878, French scientist Alexis Millardet formulated a fundamental idea that influenced the breeding of grapevines for the future. The objective of the breeders was to combine the resistant qualities of American wild species *Vitis* spp. and the wine quality of European grapevine (*Vitis vinifera* L.) (Millardet, 1885). The goal for the creation of “ideal grape” was to combine resistance to new prominent pathogens and the grape and wine quality of European grapevine (*Vitis vinifera* L.) at that time.

The objective of combining complex resistance with wine quality in one genotype based on Franco-American hybrids was not met despite remarkable achievements. The slow progress was caused especially by the polygenic character of disease resistance and fruit quality. (Bouquet, 1986).

‘Cerason’ is the result of crossing ‘Merlan’ with ‘Fratava’ (Fig. 2) carried out by V. Kraus and M. Michlovský and coworkers at Mendel University in Brno and firm “Resistant” in

1985. ‘Merlan’ comes from the former Soviet Union and is a hybrid of ‘Merlot’ and ‘Seibel 13666’, a French donor of resistance. The latter was used for improvement of resistance to fungal diseases most common in the former Soviet Union and in the Czech Republic. ‘Fratava’, *Vitis vinifera* L., originated in the Czech Republic by hybridizing ‘Lemberger’ with ‘Saint Laurent’.

‘Seibel 13666’ originated from Seibel 13 666 (Seibel 5455 × Seibel 6468) and has the representation of a particular *Vitis* spp. (Labrusca-Rupestris-Aestivalis-Cinerea-Berlandieri-Vinifera) (Galet, 1988).

The cultivar Cerason was registered for cultivation in the Czech Republic in 2008.

Description and Performance

‘Cerason’ was evaluated from 2005 to 2009 at the Faculty of Horticulture of Mendel University, Brno.

The experimental vineyard is in Lednice na Moravě (lat. 48°47'59.712" N, long. 16°48'12.216" E). The Czech Republic is a central European country and the village of Lednice na Moravě is situated near the Austrian border, ≈50 km north of Vienna.

The vineyard is planted at 2.0 × 1.0-m spacing. The vines are trained with one stem (height 0.80 m) and with simple Guyot cane pruning with one long flat fruiting cane (10 buds per cane are retained at pruning). ‘Cerason’ was compared with ‘Lemberger’.

Wine and grape must analyses were carried out according to Iland et al. (2004).

‘Cerason’ is one of the most fertile wine cultivars. This fact is evident from the high index of fertility (1.83) as indicated in Table 1. The average yield of grapes per plant (3.30 kg) is almost as high as for ‘Lemberger’ (3.62), although significantly less. Because of the high fertility and yield, the grapes need to be regulated to maintain fruit quality.

‘Cerason’ is distinguished by a lower average cluster weight (265.04 g) and lower average berry weight (1.57) than ‘Lemberger’ (Table 2). Significant differences were also found for all important berry and cluster parameters.

Qualitative parameters of grapes for the period 2005–2009 are presented in Table 3. The highest sugar content was reported in cultivar Cerason in 2006 (23.5 °Brix) and 2009 (23.1 °Brix). The average sugar content during the period 2005–2009 was significantly higher for cultivar Cerason (22.62 °Brix) than ‘Lemberger’ (21.56 °Brix). ‘Cerason’ has very

good capability to accumulate sugar during the ripening period. ‘Cerason’ is a late-ripening cultivar with an average harvest day of 14 Oct. Titratable acid is higher in ‘Cerason’ than in ‘Lemberger’. The highest levels of titratable acids in ‘Cerason’ were detected in 2006 (11.65 g·L⁻¹) and high in 2005 (11.52 g·L⁻¹). The average value for ‘Cerason’ during 2005–2009 was 10.77 g·L⁻¹, which was significantly different from ‘Lemberger’ (9.59 g·L⁻¹).

Tartaric acid and malic acid were also generally higher in ‘Cerason’ than ‘Lemberger’ (Table 4). The highest content of tartaric acid for ‘Cerason’ was recorded in 2006 (9.14 g·L⁻¹) and the lowest one was recorded in 2008 (7.08 g·L⁻¹). Yearly average of 8.46 g·L⁻¹ was not significantly different from ‘Lemberger’. Malic acid concentration in ‘Cerason’ was also higher. The maximum values were achieved in 2008 (4.79 g·L⁻¹) and the mean value for the entire studied period was 4.03 g·L⁻¹. The contents of malic acid in ‘Cerason’ and ‘Lemberger’ were significantly different.

The ratio of tartaric acid and malic acid is important in winemaking technology. This ratio changes significantly depending on the cultivar and maturity conditions of grapes (Ribéreau-Gayon et al., 2006). The ratio of tartaric acid to malic acid was the lowest in 2008. The yearly average was 2.14 for ‘Cerason’ and 2.72 for ‘Lemberger’.

The optimum ripeness depends on the combination of qualitative factors. To achieve good sugar content in relation to alcohol production, harmonious content of acids and tannin quality in skin and seeds are important. ‘Cerason’ has a high level of anthocyanins. Their content increases in dependence on degree of grape maturity. ‘Cerason’ contains only monoglucosides, not malvidin-3,5-diglucoside. The maturity of tannins in seeds is relatively good. The manner and duration of grape maceration should be optimized in dependence on degree of anthocyanin and tannin

Fig. 1. Mature cluster of ‘Cerason’.

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Fig. 2. Pedigree of 'Cerason'.

Table 1. Index of fertility and yield for 'Cerason' and 'Lemberger' of 2005 to 2009 at Lednice na Moravě, Czech Republic.

	Index of fertility ^z		Yield of grapes per plant (kg) ^y	
	Cerason	Lemberger	Cerason	Lemberger
2005	1.86	1.64	3.18	3.28
2006	1.77	1.75	3.32 a ^x	3.66 b
2007	1.81	1.81	3.42 a	3.70 b
2008	1.82	1.93	3.54	3.76
2009	1.89	1.62	3.06 a	3.70 b
Mean	1.83	1.75	3.30 a	3.62 b

^zIndex of fertility was calculated by dividing the number of grapes on the annual shoots of stocks. Evaluation was conducted before the beginning of flowering. Value was obtained as the average of 15 stocks.

^yMean of 15 stocks.

^xLetters indicate statistically significant differences determined by Tukey's test (95%).

Table 2. Cluster weight, length, berry weight, and diameter during 2005 to 2009 at Lednice na Moravě, Czech Republic.

	Cluster wt (g) ^z		Cluster length (mm) ^z		Berry wt (g) ^y		Berry diam (mm) ^y	
	Cerason	Lemberger	Cerason	Lemberger	Cerason	Lemberger	Cerason	Lemberger
2005	267.37	283.55	148.50	156.10	1.57 a	2.14 b	12.12 a	13.20 b
2006	272.19	289.60	169.30	165.70	1.44 a	2.20 b	12.24 a	13.36 b
2007	248.90 a ^x	336.79 b	163.80 a	183.80 b	1.59 a	2.16 b	12.12 a	13.12 b
2008	258.83 a	298.02 b	149.30 a	163.90 b	1.70 a	2.13 b	12.44 a	13.24 b
2009	277.90 a	339.68 b	140.00 a	173.00 b	1.56 a	2.10 b	12.04 a	13.16 b
Mean	265.04 a	309.53 b	153.18 a	168.50 b	1.57 a	2.15 b	12.19 a	13.22 b

^zMean of 50 clusters.

^yMean of 100 berries.

^xLetters indicate statistically significant differences determined by Tukey's test (95%).

Table 3. Sugar, titratable acid content, and pH value at harvest during 2005 to 2009 at Lednice na Moravě, Czech Republic.

	Harvest date	Sugar content (°Brix)		Titratable acidity (g·L ⁻¹)		pH	
		Cerason	Lemberger	Cerason	Lemberger	Cerason	Lemberger
2005	18 Oct.	22.0 a ^z	20.2 b	11.52 a	9.43 b	2.96	3.03
2006	10 Oct.	23.5 a	22.8 b	11.65 a	9.31 b	3.17	3.28
2007	10 Oct.	23.0	23.0	9.93 a	9.45 b	3.13	3.15
2008	20 Oct.	21.5	21.3	10.57 a	12.15 b	3.06	3.09
2009	13 Oct.	23.1 a	20.5 b	10.19 a	9.63 b	3.17	3.29
Mean	14 Oct.	22.62 a	21.56 b	10.77 a	9.59 b	3.10	3.17

^zLetters indicate statistically significant differences determined by Tukey's test (95%).

maturity. The ripe berries have delicate fruitiness and no grassy and "green" tones.

'Cerason' has increased resistance to the most important fungal diseases of the grapevine compared with *Vitis vinifera* cultivars.

The results of the long-term evaluation of resistance to downy mildew (*Plasmopara viticola*), powdery mildew (*Erysiphe necator*), and gray mold (*Botrytis cinerea*) are presented in Table 5. This evaluation was

performed within the period of 1996–2003. In this period, no fungicides were applied in the vineyard. The resistance parameters of the variety 'Cerason' were evaluated and compared with those of its parents 'Merlan' and 'Seibel 13666' and also with the variety 'Lemberger' (*Vitis vinifera* L.).

'Seibel 13 666' showed highest resistance to all assessed fungal diseases. 'Cerason' was similar in resistance to the parental cultivar Merlan. As compared with 'Lemberger', which showed a low degree of resistance, the resistance of 'Cerason' and 'Merlan' to all fungal diseases was high.

'Cerason' needs good growing sites. It requires plenty of solar radiation for good ripening. The preferred site is on south or southwest exposure hills.

As far as the soil conditions are concerned, 'Cerason' is not very demanding. Dry soils are more desirable because they support the development of loose clusters and berries of higher quality. This means that gravely, sandy, and loamy-sandy soils are better for this variety. Soils with a higher content of clay particles are less suitable. Wet soils cause the development of dense clusters and stimulate excessive growth of plants.

The relationship between genealogy of 'Cerason' variety and the quality of wine is also of interest. 'Merlan' is a hybrid of varieties 'Merlot' × 'Seibel 13 666'. 'Cerason' is another back-crossing with the variety 'Fratava' (*Vitis vinifera* L.). This means that genome of 'Cerason' shows a higher proportion of varieties *Vitis vinifera* L. in the pedigree as 'Merlan'. This fact is manifested also in the sensory quality of wines. 'Cerason' produces superior red wines of a typical "European character" that are very competitive with traditionally grown cultivars.

The wine has a high, intensive dark red color. The wine texture is very good with a very rich flavor and fine tannins. The aroma is markedly fruity with cherry and sour cherry tones as well as with tones of forest fruits. The aged wines can have interesting chocolate tones in taste. On other hand, however, the color of wine made of 'Merlan' is lighter, its tannins are coarse, its texture is less noble, and also its aroma is less pronounced.

'Cerason' represents one of the highest quality cultivars with disease resistance and can be used as a starting point for the cultivation in organic viticulture.

Ampelographic Description

The leaf of 'Cerason' is a medium size, wedge to circular shape with three not clean-cut lobes. The leaf is dark green. The bottom side of the leaf is smooth and hairless. The petiole sinus is slightly open, V-shaped, or slightly overlapped. Clusters are medium to large size and a conical shape with wings. The berries are arranged in the cluster with medium density. The size of berries is small, spherical with a dark blue color and waxy coating. The texture of the pulp is medium and the taste is neutral. The color of annual wood is brown.

Table 4. Tartaric and malic acid content and tartaric acid/malic acid ratios during 2005 to 2009 at Lednice na Moravě, Czech Republic.

	Tartaric acid (g·L ⁻¹)		Malic acid (g·L ⁻¹)		Tartaric acid/malic acid	
	Cerason	Lemberger	Cerason	Lemberger	Cerason	Lemberger
2005	8.95	8.73	4.23 a ^z	3.02 b	2.12	2.89
2006	9.14	8.90	4.09 a	2.78 b	2.23	3.20
2007	8.46	8.45	3.49 a	2.91 b	2.42	2.90
2008	7.08	6.92	4.79 a	4.61 b	1.48	1.50
2009	8.65	8.44	3.54 a	2.74 b	2.44	3.08
Mean	8.46	8.29	4.03 a	3.21 b	2.14	2.72

^zLetters indicate statistically significant differences determined by Tukey's test (95%).

Table 5. Downy mildew (leaves), powdery mildew (leaves, clusters), and grey mold (clusters) resistance ratings from 1996 to 2003 at Lednice na Moravě, Czech Republic.

Cultivar	Downy mildew leaves ^z	Powdery mildew leaves ^z	Powdery mildew clusters ^z	Grey mold clusters ^z
Lemberger	2.57 a ^y	2.14 a	1.71 a	2.86 a
Cerason	6.71 b	6.73 b	6.65 b	6.70 b
Merlan	6.72 b	6.43 b	6.72 b	6.45 b
Seibel 13 666	7.57 c	7.86 c	8.43 c	8.14 c

^zRating based on OIV Scale (OIV, 1983) in which grade 9 is a very high resistance and grade 1 is a very high sensitivity.

^yLetters indicate statistically significant differences determined by Tukey's test (95%).

Availability

The 'Cerason' grape is propagated by grapevine nurseries in the Czech Republic. Kraus-Mělnické vinařství, Přístavní 1282,

276 01 Mělník, Czech Republic, is the owner of proprietary rights to the cultivar (2010) and the current producer and conserver of the cultivar.

'Cerason' is maintained and assessed in the collection of genetic resources of the grapevine at the Faculty of Horticulture (Mendel University in Brno). This variety can be received within the framework of an exchange of grapevine genetic resources between individual research institutions.

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