

COMPARISON OF ALETTA AND BIANCA GRAPE VARIETIES IN HUNGARY

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ABSTRACT

In recent years there has been an increasing interest in growing grapes in ecologically friendly and organic viticulture. The Research Station of Viticulture and Enology in Eger has introduced several interspecific cultivars free from an undesired off flavour by crossing American *Vitis* species with traditional European *Vitis vinifera*. This cultivar is the result of crossing Muscat Ottonel with Seyve-Villard 12375. In this paper a new resistant hybrid, 'Aletta' was evaluated during the registration process. The evaluation was performed within the period of 2005-2009 in several production sites in Hungary. 'Aletta' was compared to 'Bianca' cultivar. 'Aletta' showed about 50% more yield but was distinguished by lower sugar content. Wine acidity was not significantly different from 'Bianca'. In sensory evaluation 'Aletta' achieved better scores. The wine had harmonious acid composition and muscat flavour. Vine is vigorous but spur pruning is recommended because of the big cluster weight and high bud fertility. The internodes are long and the canopy is loose that results an easier canopy management. Since 'Aletta' was registered in 2009 its vineyard surface has reached 1300 hectares in Hungary.

Keywords: grapevine, cultivar, grape breeding, fungal diseases, resistance, quality, wine

INTRODUCTION

In the 19th century several grapevine pathogens and pests were carried from North America to Europe. *V. vinifera* cultivars that were cultivated here for more than 5000 years are susceptible to these diseases and pests (PLANCHON, 1879). A grape breeding program was launched in the first half of the 1800s in the United States. These hybrids, e.g. Isabella, Concord, Clinton, Elvira, Noah, Humboldt, 70 Jaeger, Taylor, etc. were of unknown origin either chance seedlings or deliberate cross-breeds (GALET, 1988). After the European appearance of epidemics a conscious resistance breeding program started in France. The American *Vitis* species and hybrids were crossed with each other through a number of generations. In each case *V. vinifera* cultivars were used as parents. Since this work was done mostly by French breeders, these thousand hybrids were named after them, e.g. Seibel, Seyval, Villard, Couderc, Bacon, Gaillard (ALLEWELDT, 1979). Several European breeders continued the resistance breeding work with the best Seyval, Villard Seibel hybrids.

Polygenetic character of disease resistance makes the improvement of fruit quality difficult (BOUQUET, 1986).

'Aletta' is the result of crossing 'Muscat Ottonel' with 'Seyve-Villard 12375' (Figure 2) carried out by J. D. Csizmazia and L. Bereznai at Eger Research Station of Viticulture and

Enology in 1957. Muscat Ottonel is a cross of Chasselas and Muscat de Saumur. Seyve-Villard 12375 (synonym is Villard blanc) is a Seibel 6468 x Seibel 6905 hybrid. These Seibel hybrids are representation of *V. labrusca*, *V. rupestris*, *V. aestivalis*, *V. cinerea*, *V. berlandieri* and *V. vinifera* species (GALET, 1988).

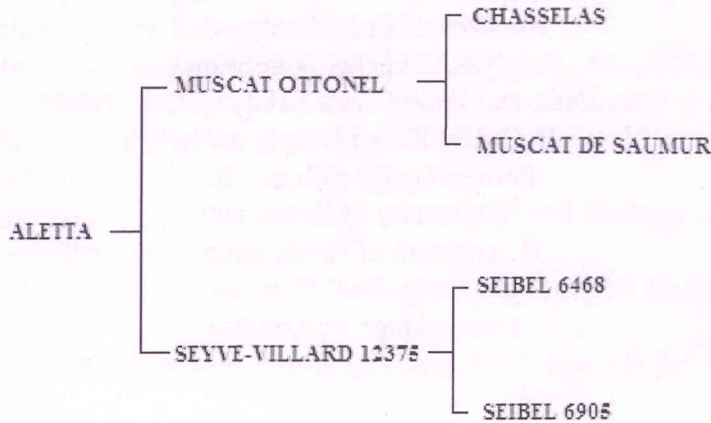


Figure 1. Pedigree of 'Aletta'

'Aletta' is an interspecific cultivar intended for the production of white wines. It is suitable for growing in ecologically maintained and organic viticulture (Figure 1). 'Aletta' belongs to cultivars with enhanced resistance to fungal diseases. The cultivar 'Aletta' was registered for cultivation in Hungary in 2009. Its production surface has increased in vineyards in Hungary (Table 1). In the state certification process 'Aletta' was compared to 'Bianca'. In downy mildew provocative experiments 'Aletta' was compared to 'Villard blanc' 'Pinot noir M 2' and 'Syrah' cultivars.

'Aletta' is mostly spread in the Kunsag Wine District which has continental climate, hot summer and cold winter. Winter and spring frosts occur frequently in this region. This cultivar became popular in the mid-'80s when winter temperature dropped below -20 degrees Celsius in three consecutive years (1985-1988).

The cultivar was named after Aletta van der Maet who was the wife of János Apáczai Csere, a famous Hungarian writer.

The leaf is medium sized and has three lobes. It has a rarely dentate leaf margin. The bottom side of the leaf is hairless. The petiole sinus is open or slightly overlapped. Clusters are medium to large size. The berries are arranged in the cluster with low density. The size of the berry is medium, the shape is spherical with greenish-yellow colour and waxy coating. Ripe berries facing the sun are tinted with a delicate orange colour. Berries have high juice-skin proportion.

The side shoots are less developed that results a loose canopy. Canopy management is simple, hand picking is easy.

Table 1. Plantation area of 'Aletta' and 'Bianca' cultivars in 2008-2013 in Hungary (ha)

	Aletta	Bianca	Vineyard surface of white cultivars
2008	144	1440	48443
2011	940	2922	45180
2013	1340	4400	42766
2008/2013	930%	314%	88%

(Source: National Council of Wine Communities database)

MATERIAL AND METHOD

'Aletta' was evaluated from 2005-2009 at the OMMI Experimental Station for Cultivars in Helvécia. Downy mildew resistance was evaluated at the OMMI Experimental Station in Pölöske. The experimental vineyard in Helvécia is located in the centre of Hungary (geographical coordinates of lat. 46°49'59" N, long. 19°37'00" E). Pölöske is in Trans-Danubia (46°45'0" N, 16°56'0" E) where the climate is Atlantic. Because of the higher rainfall downy mildew infection is more common in this region.

The vineyards are planted at 3.0 x 1.0 m spacing. The vines are trained with one trunk and one arm (height 0.8 m) and with simple spur pruning (6 buds per m²). 'Aletta' was compared with 'Bianca'. 'Bianca' originated in Hungary by hybridizing 'Seyve-Villard 12375' with 'Bouvier'.



Figure 2. Mature cluster of 'Aletta'

Source: BAGLYAS (2010)

RESULTS

The average cluster and berry weight, berry diameter were measured and the number of berries were calculated in 2009-2009 period in Helvécia Research Station (Table 2).

Table 2. Comparison of uvological parameters of 'Aletta' and 'Bianca', cluster and berry weight, berry diameter and number of berries per cluster during 2005-2008 at Helvécia

	Cluster weight (g) ^x		Berry weight (g)		Berry diameter (mm)		Number of berries	
	Aletta	Bianca	Aletta	Bianca	Aletta	Bianca	Aletta	Bianca
2005	245	147	2.81	2.18	15.7	14.63	98	71
2006	150	86	2.53	1.52	15.35	13.78	66	61
2007	180	73.5	2.44	1.47	15.95	13.5	76	64
2008	205	121	2.51	1.73	15.95	14.25	97	67
2009	235	84	2.34	1.9	15.95	15.2	103	48
Mean	203	102.3	2.526	1.76	15.78	14.272	88	62.2

^xMean of 25 stocks in 4 parcels

'Aletta' almost has a double cluster weight compared with 'Bianca' (Table 2). Berries are also bigger and there are more berries in the cluster (Table 2).

Table 3. Bud load, yield, ripening time, sugar content (Klosterauburger degree) and titratable acidity of cultivar 'Aletta' and 'Bianca' at harvest during 2005-2008 at Helvécia

	Buds/m ^{2y}		Yield (kg/m ^{2z})		Date of harvest		Sugar degree		Titratable acid	
	Aletta	Bianca	Aletta	Bianca	Aletta	Bianca	Aletta	Bianca	Aletta	Bianca
2005	2.2	2.37	0.64	0.47	18 Sept	19 Sept	18	17.5	7.4	6.9
2006	4.33	5.01	0.76a	0.57a	18 Sept	19 Sept	16.5	19.5	6.3	6.5
2007	4.29b	5.77e	0.76ab	0.79ab	11 Sept	05 Sept	17.5	20.15	5.6	4.25
2008	6.45	6.37c	1.57	1.53	19 Sept	06 Sept	18	20.15	5.7	6.35
2009	5.7	6.06cd	1b	0.93c	10 Sept	03 Sept	18	21.5	5.5	5.4
Mean	4.59	5.12	0.94	0.86	15 Sept	10 Sept	17.6	19.75	6.1	5.85
sig.	0.7		0.35				ns		ns	

^ySignificant difference was determined between yearly bud load by Tukey's test

Bud load increased by the years. In 2008, it was almost threefold compared with the year 2005. The optimal bud load as is about 6 in our conditions, which is lower than that of Bianca. 'Aletta' has higher average yield then 'Bianca' eventhough a lower bud load was applied at his later variety (Table 3). Statistical difference, however, cannot be observed between the two cultivars. The sugar content was two degrees lower and the titratable acidity was a bit higher.

Table 4. Comparison of the wines of 'Aletta' and 'Bianca' according to titratable acidity, alcohol and sugar free extract during 2005-2008 at Helvécia

	Titratable acidity (g/L-1)		Alcohol v/v		Sugar free extract g/L-1	
	Aletta	Bianca	Aletta	Bianca	Aletta	Bianca
2005	6.8	6.4	11.7	12.1		
2006	6	6.8	13.2	11.9		
2007	6.2	5.6	11.3	12.9	20.7	21.4
2008	5.3	5.5	11.5	14.05	19	19.8
Mean	6.1	6.1	11.9	12.7	19.9	20.6

'Bianca' wines had higher alcohol content than 'Aletta' because the juice had higher sugar content. 'Bianca' wines also had higher sugar free extract (*Table 4*).

Table 5. Sensory evaluation of wines of 'Aletta' in compared with 'Bianca' during 2006-2008 at Helvécia

	Colour		Clarity		Fragrance		Taste		Total points	
	Aletta	Bianca	Aletta	Bianca	Aletta	Bianca	Aletta	Bianca	Aletta	Bianca
2006	1.9	1.9	1.9	1.9	3.3	2.6	10	9.3	17.1	15.7
2007	1.8	1.8	2	1.9	3.4	2.7	9.7	9.4	16.9	15.8
2008	1.9	1.9	1.9	1.9	2.9	2.8	9.1	9.4	15.9	15.9
Mean	1.9	1.9	1.9	1.9	3.2	2.7	9.6	9.4	16.6	15.8

The 20 point scale sensory evaluation is commonly used in international and national wine competitions. This method is relatively simple. The drawback of this method is that taste flavour and not broken into components thus gives less information about wines. 'Aletta' wines were more fragrant and had a better flavour in each of the three years than that of 'Bianca'. This is due to the fact that 'Aletta' is a Muscat Ottonel hybrid (*Table 5*).

**Table 6. Downy mildew provocation test of 'Aletta' compared with Villard blanc. Pinot noir M 2 and Syrah cultivars in 2007 at Pölöske
Numbers indicate the percent of infected area on the leaf**

	Aletta	Villard blanc	Pinot noir M 2	Syrah
2007	15	10	50	40
2008	15	5	20	30
2009	10	0	30	30
Mean	13	5	33	33

According to the provocation test (Table 6) 'Villard blanc' showed the highest resistance followed by 'Aletta'. The varieties of pure *Vitis vinifera* origin showed a low degree of resistance.

'Aletta' requires plenty of solar radiation and light sandy soil for a higher Brix. The fragrance and acidity were different in the two varieties. 'Aletta' is a water-demanding cultivar similarly to most of the Seyve-Villard 12375 hybrids.

The wine has Muscat fragrance hinted with elder flavor. It has lower alcohol and acids. It requires reductive technology. Some of the growers produce cheap grape by overloading vines. This worsens the quality of the wine. 'Aletta' has won several prizes in wine competitions and is suitable to produce varietal wine. 'Aletta' represents high disease resistance and can be used in organic viticulture.

'Aletta' is grown on single curtain. The optimal bud load is 6-8 buds per m². On this bud load the average yield is 10-12 tons per hectare. Vines are spur pruned as lower buds are fertile and the cluster is big. In cane pruning the amount of carbohydrates in the canes as well as the sugar content of the berries is low. 'Aletta' is a highly winter hardy cultivar which reduces the risk of growing in low elevation sites.

CONCLUSIONS

Aletta grape variety is winter hardy, buds break late so spring frost damage is less. The operation cost of grape growing is low, the yield is high (sometimes 15-20 t/ha). This makes possible to produce cheap table wine. Due to the tolerance to downy and powdery mildew diseases this variety is suitable for eco-friendly cultivation. This is the only resistant grapevine variety in Hungary that has muscat flavor. Also, grape juice and grape brandy can be made from the crop and it can be consumed as fresh fruit.

Bianca is more widespread now in Hungary but the acreage of Aletta is increasing.

The 'Aletta' grape is propagated by grapevine nurseries in Hungary. Since this cultivar is mostly grown in sandy, phylloxera immune soil, self-rooted propagation material is used for planting.

The Eger Research Station of Viticulture and Enology is the owner of proprietary right to the cultivar (2010).

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