



EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR AGRICULTURE AND RURAL DEVELOPMENT

Directorate G. Markets and Observatories
G.2. Wine, spirits and horticultural products

Brussels,
AGRI.DDG3.G.2/RL/rr/agri.ddg3.g.2/Ares
(2018)

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WORKING DOCUMENT

Subject: Information on interspecific hybrid varieties and on the 6 forbidden vine varieties (Noah, Othello, Isabelle, Jacquez, Clinton, Herbemont)

The pressure of pests and diseases is increasing with globalisation, climate change and changes in agricultural management practices, while citizen's concerns about the reliance on pesticides and their possible effects on health have never been so high. Through measures that can reduce the risk of introduction and spread of pests and diseases, pest and disease prevention will contribute significantly to sustainable production and respond to consumers' expectations. Disease resistant varieties are a key tool in this strategy.

Adaptation to climate change is a challenge for the future of the wine sector. In Southern Europe, the wine harvest is starting months earlier than just 10 years ago. Drought and high temperatures are affecting the yields and quality of the grapes. Hybrid varieties tend to be better adapted to climate change.

1. OBJECTIVES OF THE COMMISSION PROPOSAL

The Commission proposal¹ **opens the possibility** to the Member States and the wine sector to use:

a) varieties belonging to the species *Vitis labrusca*,

¹ COM (2018) 394 final of 1.6.2018 - Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 1308/2013 establishing a common organisation of the markets in agricultural products, (EU) no 1151/2012 on quality schemes for agricultural products and foodstuffs, (EU) No 215/2014 on the definition, description, presentation, labelling and the protection of geographical indications of aromatised wine products, (EU) No 228/2013 laying down specific measures for agriculture in the outermost regions of the Union and (EU) No 229/2018 laying down specific measures for agriculture in favour of the smaller Aegean islands

b) varieties that were once forbidden for reasons not scientifically/clearly justified at the time when they were introduced and in any case no longer valid, and

c) inter-specific hybrid varieties of *Vitis Vinifera* with other *Vitis* species in PDOs - as is already the case for PGIs.

The proposal does **not** however **require** Member States and geographical indications specifications **to authorise such varieties**. Should Member States consider that such varieties should not be grown on their territory, they can simply not include them in their list of authorised vine varieties. Similarly, if wine growers do not see any advantages in such varieties, they can choose not to cultivate them. On the other hand, there are growers that currently grow some of these varieties, market the products, even if not under the term ‘wine’, and would be keen to have such products recognised as real wines (e.g. Uhdler, Fragolino, Cuvée des Vignes d’Antan). This would in addition offer them the possibility to export such wines in third countries where demand may be high (e.g. Brazil).

2. *VITIS LABRUSCA* VARIETIES

Vitis labrusca is a species of grapevine native to eastern North America and the source of many grape cultivars, including Catawba, Concord, Delaware, Isabella, Niagara, and many hybrid grape varieties such as Agawam, Alexander and Onaka.

Outside of the *vinifera* Muscat family of grapes, *Vitis labrusca* varieties have the most pronounced aromas among wine grape varieties, described as ‘foxy’.

Like many other American vine species, *Vitis labrusca* has some natural resistance to many grape diseases, including phylloxera. However, its resistance and grafting compatibility is not as high as other species, such as *Vitis aestivalis*, *Vitis rupestris* and *Vitis berlandieri*, and is not often used for commercial rootstock.

The total area in the EU where *Vitis labrusca* and its hybrids are planted is estimated to be somewhere between 15.000 and 50.000 ha (Arche Noah).

One of its well-known hybrids, Isabelle, is still grown on large areas outside of the EU, especially in Brazil (13,000 ha, 14.9% of total vine area, in 2017²), India (4,500 ha in 2000), Republic of Moldova (10,802 ha in 2009) and Ukraine (2,126 ha in 2009). As regards Brazil, the production and consumption of wine made from American cultivars, especially *Vitis labrusca* and/or hybrid cultivars, known as ‘table wines’ or ‘common wines’, is higher than those of wine made with *Vitis vinifera*. For example, in 2016, the Brazilian production of table wine was 247,457,542 million litres, 85% of which were table wines made from American cultivars. [Arcanjo N.M.O., et al (2016)]

3. PROHIBITED VARIETIES

The 6 prohibited varieties are: Noah, Othello, Isabelle, Jacquez, Clinton and Herbemont (see main characteristics in the annex).

² Focus OIV 2017 – Distribution of the world’s grapevine varieties

3.1. Origin of the prohibition

In the 1930s, many European countries began to restrict the use of highly productive American direct producers³ and hybrids, in a context of over-production and under-consumption. Arguments put forward at that time for this prohibition included the bad quality and taste as well as the high content in methanol of such varieties. This ban was enshrined in European law in 1970⁴, upheld since that time and included in the current CMO under Article 81(2) of Regulation (EU) No 1308/2013.

3.2. Data on planted areas

There is no official statistical data about the 6 forbidden varieties planting areas because of their illegal status for winemaking. Small vineyards of the forbidden varieties still remain in some MS, though the beverage produced may not be called “wine”.

The book ‘Wine Grapes – a complete guide to 1.368 vine varieties, including their origins and flavours⁵’ provides some very basic information on the areas where these varieties are grown, as follows:

Noah: There are still limited plantings in Europe, in Italy (17 ha in 2000), the Basque Country, Madeira, France, Romania, Croatia, Hungary.

Jacquez and Herbemont: Some centenarian vines still exist in the Cévennes (France) and their fruit constitutes the main ingredient in the Cuvée des Vignes d’Antan, which cannot legally be sold as wine within the EU.

Clinton: There are apparently some pockets of Clinton vines in the Cévennes and north-east Italy. The ‘Association Fruits Oubliés’ in the Languedoc (France) makes a varietal wine for ‘home consumption’.

The fruit wine ‘Uhudler’ produced in Austria is made from various interspecific hybrid varieties including Isabelle, Clinton and Noah. The entire cultivation area encompasses approximately 38 ha.

3.3. Environmental and climate change issues

The forbidden varieties exhibit **resistances** to diseases (downy mildew, powdery mildew, Botrytis) and pests (phylloxera) to varying degrees, but usually higher than *V. vinifera* varieties. This allows for significantly reducing pesticide treatments and therefore lowering farmers’ and consumers’ exposure thereto as well as pollution of the environment, not forgetting the economic advantage of having to purchase less pesticides. Some of the forbidden varieties could be part of a strategy to **adapt to climate change**, as they are able to withstand drought and heat better than other varieties (e.g. Herbemont).

³ Ungrafted/self-rooted vines

⁴ Regulation (EEC) No 2055/70 of the Commission (OJ L 224, 6.10.1970, p. 1)

⁵ Wine Grapes – A complete guide to 1,368 vine varieties, including their origins and flavours – Jancis Robinson, Julia Harding, José Vouillamoz – first published 2012

Vineyards of the forbidden varieties now belong to the **rural heritage** and contribute to a greater **biodiversity** in rural areas. Some advocates of hybrid varieties even consider that a hybrid wine museum is warranted to preserve this heritage [Schneider D. (2018)].

Beyond the conservation of biodiversity for itself, these varieties could be used in research programmes to develop new varieties incorporating some of the genes that allow them to resist to pests, diseases and difficult climatic conditions.

3.4. Health issues: Methanol content of forbidden varieties

According to R.S. Jackson, “methanol occurs in wine, but only in trace amounts. Within its normal range (100-200 mg/litre), methanol has no sensory or health consequences. Health concerns connected to methanol relate to its metabolism to formaldehyde and formic acid. Both are toxic to the central nervous system. However, **methanol never accumulates to toxic levels in wine**, at least under legitimate winemaking procedures.

The marginal amount of methanol that is found in wine comes almost exclusively from the demethylation of pectins. These methyl groups are released as methanol. Thus, methanol content is a partial function of the must pectin content. Unlike most fruits, **grapes are low in pectin content**. Thus, wine has the lowest methanol content of any fruit-based, fermented beverage. However, **pectolytic enzymes**, added to juice or wine as a clarification aid, can inadvertently **increase the methanol** content. Adding distilled spirits to a wine may also slightly increase the methanol content. The concentration of ethanol and other flavorants achieved with distillation can also augment the distillate’s methanol percentage.” [Jackson, R.S., (2014)]

Very few studies have been carried out to quantify the amount of methanol in wines made from forbidden varieties. DG AGRI has not found any solid scientific study in support of the belief that the methanol content of such wines is harmful. It would be useful if the Member States presenting this argument would provide scientifically reliable studies demonstrating that methanol is indeed a concern in relation to the prohibited varieties.

On the other hand, DG AGRI is aware of studies which conclude that methanol is not an issue in hybrid varieties, as summarised in the tables below:

Reference	Main conclusions
P. Françot et P. Geoffreoy- Le méthanol dans les jus de fruits, les boissons fermentées, les alcools et les spiritueux, 1956	The level of methanol depends on the process.
Académie des sciences (France) – compte rendu de la réunion du 19 mars 1957	Quantification of methanol in wines made from Othello grapes and Noah grapes
G.S.Stoewsand, J.J. Bertino and W.B. Robinson - Response of growing chicks to varietal wines and juices, 1969	There were no observable differences in chicks drinking wines made from <i>V. Vinifera</i> , <i>V. Labrusca</i> or <i>V. Riparia</i> grapes.
C.Y. Lee, W.B. Robinson, J.P. Van Buren, T.E. Acree and G.S. Stoewsand - Methanol in wines in relation to processing and variety, 1975	Level of methanol depends on variety and process (more methanol if the fermentation is done with the skins, less if the wine is made from hot pressed grapes)
B.Gnekow and C.S. Ough, - Methanol in wine and musts: source and amounts, 1976	The use of pectin preparation increases the methanol content of wines
Phillip, C.; Eder., R. - Der „Uhudler“ und die Wahrheit von Methanol - Der Winzer 71 (12) 20-22; 2015	Methanol levels of all samples analysed were below the critical values and a health hazard could therefore be ruled out

Source	Variety	Amount of methanol
P. Françot et P. Geoffreoy - Le méthanol dans les jus de fruits, les boissons fermentées, les alcools et les spiritueux, 1956	Jacquez (white wine)	76 mg/l
	Clinton (white wine)	169 mg/l
	Noah (white wine)	148 mg/l
	Noah (red wine)	339 mg/l
Académie des Sciences (France) – compte rendu de la réunion du 19 mars 1956	Othello (red grape)	225 mg/l
	Noah (white wine)	133 mg/l
B. Gnekow and C.S. Ough, Methanol in wine and musts: source and amounts, 1975	Isabella (red grape)	216 ppm
Phillip, C.; Eder., R. - Der „Uhudler“ und die Wahrheit von Methanol - Der Winzer 71 (12) 20-22; 2015	White and red Uhudler wines	50 – 150 mg/l
OIV (resolution OENO 19/2004)	Max limits for red wines	400 mg/l
	Max limits for white wines	250 mg/l

To be complete on the issue of methanol, it should be mentioned that researchers in the 1960s did report that wines made from certain cultivars of hybrid grapes (*V. vinifera* x *V. riparia* or *V. labrusca*) contained natural toxicants (Breider *et al*, 1965; Breider and Wolf, 1967). However, other researchers a few years later demonstrated that hybrid grapes and wines were not toxic (Stoewsand *et al*, 1969; Stoewsand and Robinson, 1972). Schürch *et al.* (1968, 1972) also observed no physiological abnormalities in experimental animals fed hybrid grape juices for four generations. [quoted in Stoewsand G.S. and Anderson J.L. (1974)]

3.5. Taste, quality and market acceptance

The taste of direct producer varieties reminds of strawberries, raspberries and currants and is often designated as “foxy”. The description of "foxy", not derived from the animal, serves as a catch-all term to describe the unique, earthy and sweet muskiness that can be perceived in direct producer varieties. In the 1920s, scientists were able to isolate the aroma compound responsible for the "foxy" musk as methyl anthranilate.

This taste has been described at times as strange and disturbing. However, it has also its admirers as demonstrated by the existence of a real market for Uhudler and similar wines (albeit under the designation “fruit wine”). Amateurs of such wines enjoy their aromatic and atypical taste. Given that taste is highly subjective and dependent on each individual, is it justifiable to exclude the possibility for some varieties to be cultivated for reasons of an unusual taste? In any case, wine producers have at their disposal modern techniques that allow them to correct undesirable tastes. Research has shown that some oenological practices are effective at reducing foxy flavours in wines, especially carbonic maceration and blending, should such reduction be considered as necessary. [Pedneault, K., Provost, C. (2014)].

3.6. Risk of overproduction linked to the forbidden varieties

Overproduction of wine is currently not an issue and can be managed with some instruments of the CMO (planting authorisations, support for green harvesting,

quality policy). It is true that wine consumption is currently decreasing in the EU market. However, this is compensated by higher exports to third countries. On this issue also, CMO instruments can be of help, e.g. promotion in third country markets and restructuring and conversion of vineyards.

3.7. Risk of a surge in the import of wines made from prohibited varieties

Significant imports of wines from prohibited varieties are unlikely, given their reputation of low-quality wines and their unusual foxy taste. Which EU importer would risk bringing in such wines into the EU if there is barely any market?

The countries producing such wines would probably be more concerned about the export capacity of the EU to their territory than the EU should be about these countries' export capacity to the EU.

3.8. Flavescence dorée

DG AGRI was informed of one study from 1965 which assessed the susceptibility of various inter-specific hybrids to flavescence dorée. That study showed that Noah was highly susceptible to flavescence dorée with a strong expression of symptoms, and therefore could not be a healthy carrier of the disease [Caudwell, A. (1965)].

DG AGRI has not found any information on the susceptibility of the other 5 forbidden varieties.

4. HYBRIDS

This section covers the varieties which include in their lineage various species of *Vitis* coming in particular from Eurasia (*V. vinifera*), America (e.g. *V. labrusca*, *V. riparia*, *V. rupestris*, *V. berlandieri*, *V. cinerea*, *V. aestivalis*) and Asia (e.g. *V. amurensis*), i.e. inter-specific hybrids.

4.1. Cultivated areas with inter-specific hybrids

The Union's legislation authorises the use of hybrids for the production of wine and also for the production of PGI wines. For instance in France out of 75 registered PGIs, 25 (i.e. 33%) authorise the use of inter-specific hybrids.

However data on the areas cultivated with hybrids in the EU is not available.

Hybrids are currently not allowed in the production of PDO wines in the EU. Such a restriction is not necessarily applied in non-EU countries. For instance, in Switzerland, some Cantons (e.g. Thurgau) include inter-specific hybrids in their list of authorised vine varieties for the production of AOC wines.

4.2. Environmental and climate change issues

Inter-specific hybrids have a greater capacity to **adapt to different climates**. They could respond to a demand from wine growers who seek varieties able to withstand drought and higher temperatures.

Such varieties are also highly **resistant to diseases**, hence **fewer pesticides** are needed. This would benefit both wine growers, who would be less exposed to

chemicals, and consumers who demand more "natural" wines (see the boom in the market of organic or natural wines). In addition, resistant varieties are a crucial tool for wine growers when important pesticides are withdrawn from the market or their use is significantly restricted. In this respect, it is likely that copper use will have to be reduced as from 2019 following a forthcoming modification of the EU legislation on pesticides. Other important aspects: using less fungicides is less costly for the farmers, and leads to a lower pressure on the target fungi, and therefore to a lower risk that they will develop a resistance thereto.

Under medium disease pressure, **12 treatments per season** are necessary for traditional *V. vinifera* varieties grown under conventional management. In a study including 183 fungus resistant grape (FRG) varieties grown in six different European countries, the **number of fungicide treatments was reduced by 73% and 82%** in organic vineyards with low and medium disease pressure, respectively. In a survey involving 65 German vineyards under organic management, growers reported having to **spray FRG varieties 3.8 times per season** on average. Estimations are that growing FRG varieties could **cut production costs by two** in French vineyards. [Pedneault K., Provost C. (2016)]. Other studies confirm the high amount of pesticides on vines every year. The study mentioned below under point 4.3 calculated that the total treatment frequency index⁶ (TFI) of a standard conventional wine reached 19.33 and that of a premium conventional wine 12.71, while the total TFIs of an organic wine and of a resistant variety wine stood at 6.15 and 3 respectively [Fuentes Espinoza, A., *et al.* (2018)]. Another research into resistant varieties expected to reduce the average TFI from 12, currently observed for the traditional varieties, to 2 in the future vine-growing systems [Merdinoglu, D. *et al.* (2018)]. Similar findings were also highlighted in a communication from the University of Udine at the 6th international symposium of the Oenoviti International network, i.e. there is a potential reduction of fungicide treatments from 15-18 to 2-3 per season with resistant varieties [Oenoviti International (2017)]. The production obtained from resistant varieties allows the production of wines with close to 0 treatments: a producer using the variety *Solaris* has stated that in 9 years he made only 2 treatments against diseases⁷.

DG AGRI has received recent requests to amend the specifications of some PGIs in order to include therein hybrid varieties. The reason invoked for such changes is the resistance of these varieties to the main vine pathogens. These would therefore need fewer chemical treatments, and could be particularly suited near sensitive areas, such as schools, built-up areas, sports grounds, etc.

Hybrid varieties also constitute a **pool for genetic resources**. Genetic diversity is always very valuable. In some countries, genetic diversity has been the basis for the development of blended wines. These wines have balanced profiles, gathering the best characteristics of each variety. Preserving a high number of varieties also has a high environmental benefit, as a genetic variability is ensured. In a changing climate

⁶ The treatment frequency index is the number of times that an agricultural area has been treated with a full dose of pesticide in a growing season = Applied dose/registration dose x treated area/plot area

⁷ Conference "Quale sostenibilita' in vitivinicultura?" 27-29 November 2018 – Pordenone, organised by the Scientific Committee RIVE (rassegna internazionale viticoltura enologia) in the frame of Fiera di Pordenone on viticulture and enology: <http://www.exporive.com/en/program-28-november/>

this will provide a good source for adaptation measures. [Fact sheet ‘Biodiversity protection in viticulture in Europe’(2017)]

The importance of hybrid varieties is gaining more and more ground in the scientific world. This is demonstrated in particular by the international symposium⁸ entirely dedicated to the subject of resistant grape varieties and alternatives to pesticides which the Oenoviti International network organised in May 2017 [Oenoviti International (2017)].

4.3. Economic aspects

It is currently not possible to evaluate quantitatively the economic impacts of opening the use of inter-specific hybrids to PDO wines, because the measure is not in place yet.

However, from a qualitative point of view, it can be expected that broadening the use of hybrids will have a positive impact on winegrowers’ income because it will:

- decrease the amount of fungicides up to 80%, and therefore lower farmers’ costs linked to the purchase of pesticides and to the petrol used during spraying⁹,
- limit harvest losses and contribute to stable yields year on year,
- improve the image and added-value of European wines on the market (thanks to the lower use of pesticides),
- reduce the need for irrigation while preventing yield losses in case of drought.

4.4. Taste, quality and market acceptance

In 2018, some researchers from INRA evaluated the market acceptance of resistant hybrid grape varieties. They assessed consumers’ willingness to pay for a wine from a resistant grape variety, compared with their willingness to pay for other conventional wines, from the same production region and at the same price level. They also evaluated the effect that information about environmental and health performances can have on willingness to pay for wines from resistant varieties and on consumers’ quality-price trade-offs. The results showed that, on a purely sensory level, consumers had difficulty in accepting wine from a resistant variety. However, communication focusing on environmental and health performances very much improved the position of a wine from a resistant variety, putting it ultimately at the top of the average qualitative evaluations. Wines from resistant varieties even proved to be more successful in terms of market share, if production costs allow for sale prices similar to conventional wines. [Fuentes Espinoza, A., *et al.* (2018)]

⁸ Oenoviti International Network – 6th International Symposium: New resistant grape varieties and alternatives to pesticides in viticulture for quality wine production (16 May 2017)

⁹ During the conference «Quale sostenibilita in vitivinicultura?» in the framework of Fiera di Pordenone on viticulture and oenology (27-29 November 2018), a researcher from the University of Milan indicated that resistant varieties could allow a reduction in costs of 600 to 1000 euros per ha.

4.5. Flavescence dorée

Specific research has shown that root-stocks, which are often hybrids between various American *Vitis* (*V. riparia*, *V. berlandieri*, *V. rupestris*), presented few or no symptoms of flavescence dorée although the plants were infected. Thus, these plants constituted healthy carriers. This research also revealed that varieties of *Vitis vinifera* themselves expressed various levels of susceptibility to flavescence dorée (e.g. Merlot and Syrah are poorly susceptible in contrast to Cabernet Sauvignon). The study suggested that, to cope with the disease, genetic traits of interest could rather be found in the *V. vinifera* germplasm. [Eveillard S. *et al.* (2016)]

The Commission's proposal broadens further the use of interspecific hybrids already allowed for the production of PGIs, by authorising them for PDOs. The phytosanitary characteristics of these types of hybrids are already being addressed widely in PGI areas. The Commission has not received any requests to restrict the use of these hybrids in PGIs for phytosanitary reasons. This is why the Commission considers its proposal to be reasonable and justifiable.

In any case, to fight against the disease, researchers recommend that prophylaxis should be reinforced by guaranteeing the sanitary state of vine plants in nurseries (treatment with warm water), lowering the populations of the vector (insecticides applied to vineyards), and undertaking an intensive prospection of plots to remove symptomatic branches and vines as well as wild and abandoned vines. If well applied, these measures do limit the propagation of the disease and can even reverse it. [Cousin M.T., Boudon-Padieu, E. (2002); Weintraub P. G., Wilson M.R. (2010)]

5. EVALUATION OF THE IMPACT OF THE CAP MEASURES APPLICABLE TO THE WINE SECTOR

In 2018, DG AGRI commissioned an independent study to evaluate the effects of the various instruments of the Common Market Organisation (Regulation (EU) No 1308/2013¹⁰) applicable to the wine sector, including the scheme for authorisation of vine plantings.

In this context, evaluation question 14 (EQ14) assesses the extent to which the EU restrictions concerning the classifiable wine grape varieties and the wine grape varieties that may be used for the production of PDOs and PGIs have proven to be relevant for preserving or improving the quality of the EU wines and for enhancing their competitiveness. The table below summarises the answers to EQ14 provided by the evaluators¹¹ in their draft final report (November 2018).

¹⁰ Regulation (EU) No 1308/2017 of the European Parliament and of the Council of 17 December 2013 establishing a common organisation of the markets in agricultural products and repealing Council Regulations (EEC) No 922/72, (EEC) No 234/79, (EC No 1037/2001 and (EC) No 1234/2007, O. J. L 347, 20.12.2013, p. 671

¹¹ Agrosynergie – Groupement Européen d'intérêt économique formed by the companies ORÉADE-BRÈCHE Sarl (Oréade Brèche Environnement et Développement) and COGEA S.r.l. (Consulenti per la Gestione Aziendale)

	General rule: ban of the use of six varieties	General rule: classification of authorised wine grape varieties	Rule for PDO: only <i>Vitis</i> <i>vinifera</i>	Rule for PGI and other wines: cross between <i>Vitis</i> <i>vinifera</i> and other authorised <i>Vitis</i>
Quality issue (gustative quality)	No specific impact identified	No specific impact identified	No specific impact identified	Relevant
Safety and Human health	No specific impact identified	No specific impact identified	No specific impact identified	No specific impact identified
Economic issue (competitiveness)	Not relevant: disadvantage compared to third countries	Not relevant: disadvantage between MS	Not relevant: disadvantage compared to other wines	Relevant
Environmental issue (biodiversity, climate change, adaptation to local conditions)	Not relevant: negative impact	Not relevant: negative impact	Not relevant: negative impact	Relevant

In their conclusions on this evaluation question, the evaluators state the following:

“The analysis of the match between the needs of the wine sector and the EU regulation showed that the EU rules on wine grape varieties seem to be no longer necessary to preserve or improve wine quality. This concerns the ban for all wine products using the six following varieties: Othello, Clinton, Jacquez, Noah, Hebermont and Isabelle; and for PDO wines to use varieties crossed between *Vitis Vinifera* and other *Vitis* sp.. The list of varieties authorised for each PDO are laid down in the PDO specifications, ensuring that the combination between the varieties used and all other factors lead to a satisfactory quality. Moreover, nowadays, the technological advances in winemaking allow to produce quality wine even with less qualitative varieties. A large range of varieties could also lead to more different wines with specific organoleptic characteristics and thus allow to differentiate the range of wine products. There is no justification to conserve these restrictions anymore, considering quality issue.”

Based on the various findings of the report, the evaluators recommended “removing restrictions on the use of six varieties and of crosses with other *Vitis* for PDO wines to allow the development of vines resistant to diseases or drought. This would thus respond to current issues regarding biodiversity, environmental sustainability and human health protection as well as to improve EU product competitiveness”.

6. CONCLUSION

In view of all the above-mentioned data, research and findings, the Commission considers that maintaining the status quo is not an acceptable option.

Its proposal is justified and, if adopted, will:

- contribute to improving the environmental sustainability of the wine sector,
- contribute to reducing the exposure of wine growers, consumers and citizens to pesticides,
- improve the quality of European wines,
- provide added-value to EU wines, that will be able to boast a lower use of pesticides compared to wines from other regions of the world,
- help vineyards to adapt to climate change,
- foster innovation and research on, and with, new varieties.

With this proposal, the Commission is offering the wine sector an opportunity to be better equipped to address the main challenges of the future sustainability and climate change, and responding to citizens' concerns and expectations on health and the environment.

Annex

This annex gathers available information on the 6 prohibited vine varieties (Noah, Othello, Isabelle, Jacquez, Clinton, Herbemont).

1. NOAH

Noah is an American hybrid once popular in Europe, notably in the Spanish Basque Country, but now almost extinct.

Origins: Noah is the result of a natural cross between Taylor (*Vitis labrusca* x *Vitis riparia*) and an unknown *Vitis labrusca* with other reports claiming the *V. labrusca* to be Hartford.

Viticultural characteristics: Noah has berries of a light green/yellow colour. It is vigorous, late budding and mid-ripening. It shows resistance to mildew and back rot, but susceptibility to chlorosis and possibly to phylloxera.

Taste: The juice has the typical foxy flavour of *labrusca* varieties.

Areas of production: There are still limited plantings in Europe, in Italy (17 ha in 2000), the Basque Country, Madeira, France, Romania, Croatia, Hungary, Austria. Noah is also planted in the US, the Republic of Moldova and Serbia.

Notable 'wines': Uhudler, Fragolino.

2. OTHELLO

Origins: Othello is a hybrid between Clinton (*V. riparia* x *V. labrusca*) and Frankenthal (= Black Hamburg = Schiava Grossa).

Viticultural characteristics: Othello has bluish black berries and is late budding. It does not require treatments against fungi and is resistant to phylloxera.

Taste: The wine has a particular foxy flavour, reminding of raspberry.

Areas of production: Today, Othello has nearly disappeared.

3. ISABELLE/ISABELLA

Origins: It is a cross between the wild native American species, *Vitis labrusca*, and an unknown *Vitis vinifera* variety.

Viticultural characteristics: black berries, early budding, late ripening, good resistance to powdery mildew, slightly sensitive to downy mildew and black-rot, little sensitive to grey mould, resistant to phylloxera. Withstands tropical and semi-tropical, but also cold, conditions.

Taste: foxy/raspberry taste.

Areas of production: Isabelle was once widely planted in Europe. It is still grown in quantity in Brazil (13,000 ha, 14.9% of total vine area, in 2017¹²), India (4,500 ha in 2000), Republic of Moldova (10,802 ha in 2009) and Ukraine (2,126 ha in 2009).

Notable 'wines': Uhudler, Fragolino

4. JACQUEZ

Origins: It is said to be a member of *Vitis bourquiniana*, a botanically dubious group of *Vitis aestivalis* x *Vitis vinifera* hybrids.

Viticultural characteristics: red-fleshed berries. Late-budding, mid-ripening, moderately vigorous and productive but a rather low yield in juice. Resistant to powdery mildew and grey mould, rather susceptible to black rot and downy mildew.

Taste: Provides a fragrant wine with aromas of blackcurrant, cherry, spices, blackberry.

Areas of production: Jacquez was at one time popular in southern France. Some centenarian vines still exist in the Cévennes. The variety's surest stronghold is Brazil (1,000 ha, 1.1% of total vine area, in 2017).

Notable 'wines': Cuvée des Vignes d'Antan

5. CLINTON

Origins: Clinton is a spontaneous *Vitis riparia* x *Vitis labrusca* hybrid.

Viticultural characteristics: Black berries, late budding, hardy, with good general disease resistance and immune to phylloxera.

Taste: Gives a wine rich in alcohol, well coloured, with a slight foxed flavour.

Areas of production: There are apparently some pockets of Clinton vines in the Cévennes (France), north-east Italy, Switzerland and Brazil.

Notable beverages: Schiavo in the Veneto use Clinton as a component in their grappa and the Association Fruits Oubliés in the Languedoc makes a varietal 'wine' for home consumption. Clinton is also among the varieties used to make Uhudler 'wine'.

6. HERBEMONT

Origins: Its exact origin is obscure and disputed. It is considered to be a hybrid between *Vitis aestivalis* and an unknown *Vitis vinifera* variety.

Viticultural characteristics: pale reddish-brown berries. The variety is resistant to phylloxera and other diseases, and tolerant to drought and heat.

¹² Focus OIV 2017 – Distribution of the world's grapevine varieties

Taste: Herbemont was deemed so succulent that it was often used as a table grape in the early 19th century. However, it was most famous for producing quality wines (usually pale red or white wines).

Areas of production: There are still a few vines in the Cévennes. In the humid climate of southern Brazil the variety found favour because of its disease resistance (846 ha in 2007).

Notable 'wines': Cuvée des Vignes d'Antan

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