

GOOD PRACTICE DESCRIPTION FORM

Title	Resistant grape varieties
Proposer subject	Provincia Autonoma Trento
Short description of the practice	<p>The two major diseases that require the most treatments in viticulture are the downy mildew (<i>Plasmopara viticola</i>) and powdery mildew (<i>Erysiphe necator</i>). These fungus are not native of Europe but were imported with new varieties from Northern America in the 19th century. Viticulture in Europe was to be ruined completely, also because of the phylloxera, which devastated vines at the same time. This is the reason why every year traditional grape varieties have to be treated chemically 6 – 16 times, depending on weather conditions. Every time a wine grower treats his vines, he sprays chemicals on them and this is how these substances end up in nature. According to analysis by the European Institute of Statistics (EuroStat), viticulture covers 3.3% of the total agricultural area of the European Union and uses 65% of all fungicides used in agriculture. This means the use of chemicals in viticulture is much higher than the same use in any other agricultural sector within Europe.</p> <p>In Italy, in 2013 were legally registered and authorized Solaris, Johanniter, Helios, Prior, Cabernet Carbon e Cabernet Cortis. These 6 new resistant vines have been created by University of Freiburg and were tested by the research centre of Edmund Mach Foundation. In 2016, after 15 years of research by the University of Udine and the IGA (Applied Genomic Institute – Italy) and hundreds of crossing and thousands of examined plants, the first 10 resistant vines were legally registered and authorized, they are Fleurtai, Soreli, Sauvignon Kretos, Sauvignon Nepis, Sauvignon Rytos, Cabernet Eidos, Cabernet Volos, Merlot Khorus, Merlot Kanthus, Julius.</p> <p>Another fungus very dangerous for vines it is <i>Botrytis cinerea</i>. Edmund Mach Foundation has sectioned and registered 4 tolerant varieties to botrytis: Iasma Eco1, Iasma Eco2, Iasma Eco3, Iasma Eco4.</p>
Aim of the best practices	<p>The aim was to combine the good resistance to diseases and phylloxera of the American grape varieties with the high quality of European varieties. These are hybrids crossings between a European (<i>Vitis vinifera</i>) and an American (<i>Vitis</i> something else) vine. The American vines have much better resistance to fungal diseases and thus using hybrids can reduce the need for spraying. In the recent years were made hybrids crossings between Asiatic and European vine to induce resistant as cold temperature.</p>
Suggestion for implementation	<p>In order to produce a good wine, it is advisable to plant these varieties in not whole vineyard but in some risk areas. For example: close to residential areas or close to public green areas, in areas where it is difficult to carry out the treatments, for example on slopes.</p>
Expected Results	<p>Resistant grape varieties represent a good choice to do something against pollution and improve a sustainable viticulture. In fact, these varieties represent a way to reduce chemicals and to decrease soil pollution by also running less tractor.</p>
Improvable or Critical	<p>Fungus resistant grape variety will not solve the problem of pollution. This does not mean that there might not arise any other challenges. This is because vines, if they</p>

Aspects	are planted in monocultures may attract also other vermin, such as insects or virus, which ones again require treatments of some kind. Maybe one day there will be even a mutation of the above stated illnesses, which might once again lead to the damage to resistant grape varieties.
Limitation or Adaptability	In the European country is not still allowed to produce DOC wines by Resistant grape varieties.
Bibliographic indications	http://www.vivairauscedo.com/ https://www.piwi-international.de/it/ https://www.fmach.it/ http://www.vivc.de/
References	Provincia Autonoma Trento, Fondazione Edmund Mach, Vivai cooperativi rauscedo

DOWNY MILDEW AND POWDERY MILDEW RESISTANT VARIETIES (University of Freiburg):

SOLARIS. As a constitution, the Solaris variety dates back to 1975. It is a Merzling x cross (Saperavi Severinyi x Muscat Ottonel). It matures quite early and its white berried grapes usually have a high sugar content. The wine has a fruity bouquet that sometimes recalls the pineapple or hazelnuts to the taste, has a good harmonious and alcoholic structure.

JOHANNITER. It is a white variety created in 1968 by Johannes Zimmerman at the State Institute of Viticulture in Freiburg. It is a cross between Riesling * [Seyve-Villard 12.481 * (Ruländer * Gutedel)]. It matures in medium season.

The wine has a delicate fruity note, is characterized by a grapefruit sensation, while the bouquet is intense and pleasant. The taste is harmonious, rather velvety and full.

HELIOS. The Helios variety is obtained from the Merzling x Fr. 986-60 cross. This white berry variety is medium early, has a medium-large bunch and a balanced vigor. The wine obtained has fruity notes, with a medium-bodied structure taste.

PRIOR. The red berry variety Prior (Fr 484-87) is the result of the cross (Joan Seyve 234-16 X Bl. Spätburgunder) X (Merzling X (Saperavi severnyi X St. Laurent)). It is a medium-late and very productive ripening variety. The wine has floral-fruity notes, medium structure, recommended for vintage consumption.

CABERNET CARBON. Red berry variety obtained from the crossing of Bronner x Cabernet Sauvignon. The ripening period is medium-late, and the wines have spicy-balsamic notes with a good structure and a good extract.

CABERNET CORTIS. Red berry variety obtained from the crossing of Solaris x Cabernet Sauvignon. Early maturing period, the wines have very intense fruity notes, a good body and elegant structure. Variety suitable for producing good quality wines.



Vivai cooperativi Rauscedo (VCR):

FLEURTAI®

Cultivar from the cross Tocai Friulano x 20-3 (code ud. 34-111)

Early ripening time. Resistance to diseases and adverse conditions: excellent resistance to downy and powdery mildew. Reduced sensitivity to botrytis and anthracnose. The aromatic profile shows a good intensity of volatiles with notes of white flowers as well as glycosides providing notes of pear and almond which are typical of the parent Tocai Friulano. The aromatic amplexness is mostly due to fruity and spicy aromas.

SORELI®

White cultivar obtained from the cross Tocai Friulano x 20-3 (code ud. 34-113)

Early ripening time. Resistance to diseases and adverse conditions: excellent resistance to downy mildew and good-to-excellent resistance to powdery mildew. Reduced sensitivity to botrytis, acid rot and secondary diseases. The aromatic profile is intense with tropical notes, pineapple and passion fruit. It resembles the parent Tocai Friulano.

SAUVIGNON KRETOS®

White cultivar obtained from the cross Sauvignon x 20-3 (code ud. 76-026)

Early ripening time. Resistance to disease and adverse conditions: good resistance to downy mildew and fairly good resistance to powdery mildew. Reduced sensitivity to botrytis, acid rot and secondary diseases. The aromatic profile of this variety is reminiscent of Sauvignon 108, so is very fruity. It is conducive to production of young wines or wines to be consumed after a brief refinement period.

SAUVIGNON NEPIS®

White cultivar obtained from the cross Sauvignon x Bianca (formerly ud. 55-098)

Average-early ripening time. Resistance to disease and adverse conditions: good-to-excellent resistance to downy and powdery mildew. Reduced sensitivity to secondary diseases. Wines have a complex aromatic profile leaning towards floral-fruity with spicy notes, good level of pyrazines that are reminiscent of Sauvignon.

SAUVIGNON RYTOS®

White cultivar obtained from the cross Sauvignon x Bianca (code ud. 55-100)

Average ripening time. Resistance to disease and adverse conditions: good-to-excellent resistance to downy and powdery mildew. Sensitive to botrytis because of the highly compact cluster and tolerant to black rot. The aromatic compounds are superior to the average varietal and have tropical hints combined with a marked mineral scent.

MERLOT KANTHUS®

Red cultivar obtained from the cross Merlot x 20-3 (code ud. 31-122)

Early ripening time. Yield: medium. Resistance to disease and adverse conditions: good resistance to downy and powdery mildew. Reduced sensibility to black rot, less to anthracnose. Sensitive to lack of magnesium. The aromatic profile is mellow fruity with violet hints.

MERLOT KHORUS®

Red cultivar obtained from the cross Merlot x 20-3 (code ud. 31-125)

Average ripening time. Yield: more than medium. Resistance to disease and adverse conditions: very good resistance to downy mildew and good resistance to powdery mildew. On average sensitive to botrytis, acid rot and anthracnose under conditions favourable to disease development.

The aromatic profile shows evident notes of red fruit. The wines have an intense ruby-red colour, slightly purple, with good structure.

CABERNET EIDOS®

Red cultivar obtained from the cross Cabernet Sauvignon x Bianca (code ud. 58-083)

Late ripening time. Yield: medium-high. Resistance to disease and adverse conditions: good-to-excellent resistance to downy and powdery mildew. The aromatic profile shows intense floral-fruity and spicy notes with excellent polyphenol profile for quality and composition of tannins and for the intensity and tonality of pigments. It is conducive to wines of medium to long refinement period.

CABERNET VOLOS®

Red cultivar obtained from the cross Cabernet Sauvignon x 20-3 (code ud. 32-078)

Average ripening time. Yield: medium-high. Resistant to disease and adverse conditions: good resistance to downy mildew and fairly good resistance to powdery mildew. Reduced sensitivity to botrytis and secondary diseases. The aromatic profile is complex with intense fruity notes that are reminiscent of the parent, Cabernet Sauvignon. Suitable for production of wines requiring medium to long refinement periods also thanks to the high content of intense pigments.

JULIUS®

Red cultivar obtained from the cross Regent x 20-3 (code ud. 36-030)

Average-early ripening time. Yield: medium. Resistance to disease and adverse conditions: good resistance to downy mildew and tolerant to powdery mildew. Reduced sensitivity to anthracnose. Enological potential: able to achieve an excellent sugar and acidity accumulation in the must. The aromatic profile is very positive because has an above average concentration of floral and fruit notes.

For more details we leave you the following link where you can find the technical nr. 18 report about Resistant grape Varieties of Vivai cooperativi Rauscedo.

<http://www.vivairauscedo.com/quaderni-tecnic>

BOTRITIS CINEREA RESISTANT VARIETIES:

The red berried varieties Iasma Eco 1 (Teroldego x Lagrein cross) and Iasma Eco 2 (Teroldego x Lagrein cross) have characteristics of remarkable rusticity towards the bunch rot, but also have a high content in anthocyanins and total polyphenols and an excellent sugar-acid ratio. From their grapes we obtain wines with good body and consistency and with a good content in tannins and aromas with a pleasant floral-fruity note.

The white grape varieties Iasma Eco 3 (Moscato Cross Ottonel x Malvasia di Candia) and Iasma Eco 4 (Moscato Cross Ottonel x Malvasia di Candia) are characterized by their different and complex aromatic content. From the first one we obtain fresh slightly aromatic wines that recall melissa and sage herbs with floral-fruity notes, medium-bodied and good flavor, while Eco Iasma 4 can give valid solutions and interpretations to late harvest wines.

In the pictures below: IASMA ECO1 (upper-left) IASMA ECO 2 (upper-right)
IASMA ECO 3 (lower-left), IASMA ECO 4 (lower-right)

