



Grape production and Wine Processing

Control of Quality and Safety in Organic Production Chains

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This leaflet provides a practical overview for producers and others involved in grape production and wine processing, of what can be done at these steps to improve the quality and safety of organically produced wine, in addition to certification and general food safety requirements. Other leaflets cover production of other commodities and separate leaflets aim at consumers and retailers.



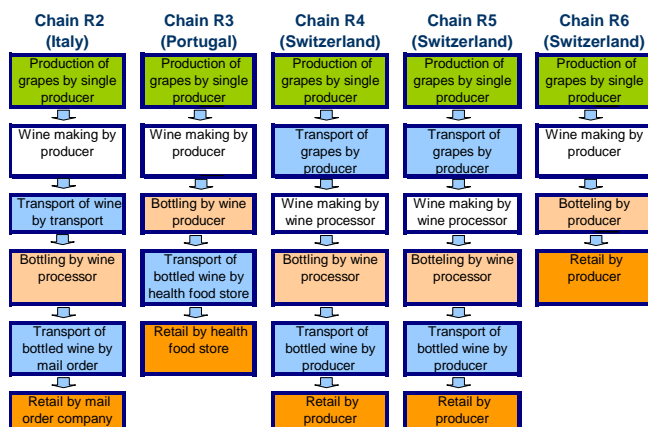
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The Organic HACCP Project leaflets

This is no.14 of a series of 14 leaflets comprising information on how control of quality and safety can be further improved in organic supply chains across Europe. The Organic HACCP project has reviewed studies of consumer concerns and preferences in relation to organic production systems and collected information about typical production chains for 7 commodities in regions across Europe. For each of the criteria listed below, the information was analysed to identify Critical Control Points (CCPs), defined as the steps in supply chains where the qualities of the final product can be controlled most efficiently. CCPs were identified using methods developed for Hazard Analysis by Critical Control Points (HACCP), a standard procedure to prevent food safety risks. The new aspect is thus to improve how consumer concerns are addressed, through the use of the CCP concept for a wide range of criteria, not only safety.

1. Microbial toxins and abiotic contaminants
2. Potential pathogens
3. Natural plant toxicants
4. Freshness and taste
5. Nutrient content and food additives
6. Fraud
7. Social and ethical aspects

Overview of the chains examined for wine making



The diagram shows the analysed organic supply chains for wine throughout Europe. On the project's homepage (www.organichaccp.org) they are shown in more detail and each of the CCPs are shown and described.

Grape production

Important issues to control at this step

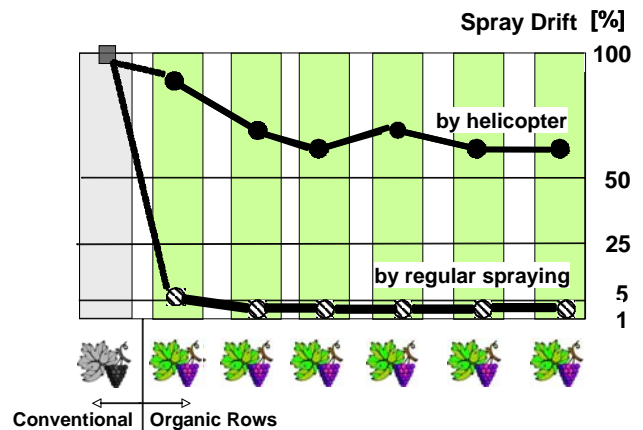
The typical wine taste is mainly determined by the cultivar.

Secondary metabolites are the source of wine flavour, colour and taste. Their content is dependent on the cultivar, the microclimate and the nutrient supply of the grape vine.

Grapevines have a low nitrogen requirement. Over-use of N-containing organic fertiliser can have negative influence on taste-relevant components in the wine.

Specific problems for organic production

Spray drift in regions with small-scale grape production by less careful conventional farmers or by helicopter applications (data from FiBL studies; see chart below) may result in contaminated grapes. It is the organic farmer who needs to take action to prevent any contamination of its products.



The fungal disease downy mildew, *Plasmopora viticola*, has traditionally been controlled by the use of copper salts, also in organic farming. The use of copper-based pesticides is a problem for the image of organic farming among consumers, and many retailers demand copper-free production. It has been banned from both conventional and organic farming in some Scandinavian countries and the Netherlands.

Recommendations

- Select cultivars with good taste and low susceptibility to downy mildew and other diseases and pests. Make sure they have been tested and performed well in your region.
- Limit the use of N containing fertiliser and harvest late after sunny, warm days to optimise wine taste.
- If pesticides can have drifted onto your vineyard, get a leaf sample analyzed. If residues are found, either i) ask your conventional neighbour to buy the affected grapes from you for the same price as organic and cost of the analysis, or ii) harvest the first two rows separately, with subsequent separate processing and marketing.
- Agree with neighbours and helicopter operations on safety measures such as spraying only under certain wind conditions with well-maintained equipment, using substances allowed in organic farming on part of the conventional vineyard, restricting where the nozzles are open.
- Establish hedges or other barriers to protect the crop from spray drift from neighbours, and promote merging of small areas with organic vineyards including exchange of land.
- Use less than the permitted amount of copper (or none) and prepare for copper-free production in the future. Develop replacement strategies including the use of clay minerals, plant tonic and resistant cultivars.

Wine processing

Specific problems for organic production

In cellars with parallel processing of organic and non-organic grapes, there is a high risk for contamination with pesticides up to levels which are not in compliance with the consumers' idea of organic wine: Either mixing up of organic and non-organic grapes or juice, or carry-over of residues from insufficient cleaned hoses, filter layers, containers as well as the press, the bottling machine and handling of small volume containers.

Recommendations (parallel wine processing operations)

- Evaluate each step along the processing line to locate those steps where pesticide residues can be introduced.
- As far as possible use dedicated organic equipment, hoses, containers, filters etc. (paint in different colours).
- Even if not required by the certifier, always process organic material before non-organic, and thoroughly clean the entire system before starting up again with organic. Especially the filter layers may accumulate pesticides.
- Maintain permanent identification of each batch.
- Monitor and document both organic and non-organic activities (input-output reconciliation).

Wine storage

Important issues to control at this step

Parallel storage of un-bottled organic wine with non-organic and/or in conversion material increases the risk for unintentional or intentional blending to improve quality or increase financial gain. Consumers are concerned about the risk of fraud, especially when organic wine is much more expensive than wine produced conventionally.

Recommendations

- Store the wine in dedicated organic tanks/cellars.
- Maintain permanent identification of each batch on the tanks and casks.
- Monitor and document both organic and non-organic activities (input-output reconciliation).
- When bottling, make sure the label contains the name and address of the producer and the batch number.

General Recommendations

- As a grape producer stay in close contact with your wine maker, and discuss the problems which may rise with parallel processing in the wine cellar. Also exchange information about your quality control and their quality measurements with the companies and persons in charge of the other parts of the chain. Formal collaboration agreements can ensure that quality and safety is con-

trolled at every step of the supply chain, and that the costs of this are shared fairly among the participants.

- Establish and maintain your own quality assurance system to prevent contamination or mislabelling: For each step, describe how it should be done on a checklist. Imagine what can go wrong and decide in advance what to do in each case of theoretical problems and accidents that may occur. Fill in these checklists for each batch, with date and time for each procedure and with notes describing anything unusual that happened.
- Provide permanent identification of batches. Take retain samples of wine from all batches and let them analyse if you are in doubt.

Continuation in other EU or national projects

The work of Organic HACCP identified several areas where more research is needed to improve the control of quality and safety of organic products.

The following topics relevant for quality and safety of grape production and wine making will be investigated in further EU or national projects:

- Replacement of Copper Fungicides in Organic Production of Grapevine and Apple in Europe (REPCO), 6th Framework Programme, Contract no. 501452, Running from 11/2003, 36 Months. Webpage: <http://www.rep-co.nl/>.
- Within the "Bundesprogramm Ökologischer Landbau" several projects deal either with replacement strategies for copper or general copper reduction, with the (biological) control of important fungal diseases of vine (*Peronospora* spp. and *Oidium* spp.) or preventive plant protection strategies; see <http://www.bundesprogramm-oekolandbau.de/projektliste.html>, keywords: Pflanze, Wein (in German).

Editorial Notes

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Bibliographical Information

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A PDF version can be downloaded free of charge from the project internet site at www.organichaccp.org or from

www.orgprints.org/view/projects/eu-organic-haccp.html.

Printed versions can be ordered from the FiBL Shop at www.shop.fibl.org.

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About Organic HACCP

The main objectives of this Concerted Action are to assess current procedures for production management and control in organic production chains, with particular reference to the characteristics valued by consumers, and from this to formulate and disseminate recommendations for improvements.

The 2-year project started in February 2003. The results of the project, including a database of Critical Control Points in the analysed chains, are available on the project website www.organichaccp.org.

The Project Partners

- University of Newcastle (UNEW), Newcastle upon Tyne, United Kingdom.
- Research Institute of Organic Agriculture (FiBL), Frick, Switzerland.
- Royal Veterinary and Agricultural University (KVL), Copenhagen, Denmark.
- Italian National Research Council, Institute of Food Science (CNR-ISA), Avellino, Italy.
- University of Aberdeen (UNIABDN), Aberdeen, United Kingdom.
- Ludwig Boltzmann Institute for Biological Agriculture (LBI) Vienna, Austria.
- Universidade de Trás-os-Montes e Alto Douro (UTAD), Vila Real, Portugal.
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- National Institute for Consumer Research (SIFO), Oslo, Norway.