

Conversion timeline and aspects related to organic grape cultivation and winemaking

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Technical aspects of converting to organic grape cultivation and winemaking (Understanding the main requirements for conversion to organic systems: timing, selection of suitable location, varieties, vine management practices.)

The organic vineyard system special attention should be paid to:

- Location - environmental factors of a site can affect disease, insect and weed control.
- Producing premium wine - ensures good returns at reasonable prices. Selection of variety is a major factor.
- The type of trellis and pruning management - ensures excellent sun penetration and air flow, which are important for disease control.
- Disease management - can be managed adequately by a small range of products and supported by a holistic management system.
- Nutrient management - based on cover crops, composted and naturally occurring material.
- Good hygiene and minimal exposure or contact in winemaking - especially important for organic wines.

LOGOS





REGULATION IN EUROPE

Organic production has been regulated at European level since 1991.

Organic is one of the identification signs of quality and origin managed by IFAO.

Organic production is governed by two regulations:

"Principles of organic production and labeling": (CE) 834/2007 and "Application rules for organic production": (EC) 889/2008.

Wine production is subject to European legislation: "The Organization Commune du Marché viti-vinicole "(CMO viti-vinicole: (CE) 479/08) and its terms of application, including oenological practices (RCE 606/09).

Since February 8, 2012, rules on organic winemaking (RUE 203/2012) complete the European organic regulation, allowing the certification of wine and more only grapes

CONVERSION TO ORGANIC VITICULTURE

- Organic viti production;
- The specifications imposed
- Controls and certification
- Aid devices

AGRICULTURE GOVERNED BY PRINCIPLES STRICTS

Organic farming is agriculture sustainable, based on:

- Valuing abundant resources,
- The economy of scarce resources,
- Ecosystem preservation,
- Maintaining the diversity of systems production (avoid monoculture)

DEFINITION OF AGRICULTURE ORGANIC

Organic Farming is agriculture that does not use products that do not use synthesis chemicals

The main points of biological agriculture :

- No synthetic input
- No GMOs, no irradiation
- No herbicide

PRINCIPLES OF PRODUCTION ORGANIC

- 1) Respect to a conversion period(time = condition of the evolution to another mode)
- 2) Maintaining and improving soil fertility(floor = system vault key)
- 3) Prophylaxis as a control strategy(prevention = piloting tool)

HOW TO ACHIEVE CERTIFICATION

Grape production

- Organic certification of farming systems generally takes three or more years to achieve.
- During the first year of compliance no organic certification is granted. In the second year of compliance, certification as ‘organic in conversion’ may be granted.
- Progress to full ‘organic’ status will take a minimum of three years complying with standards.

STEP BY STEP CONVERSION TO ORGANIC VITICULTURE

1. Choose an organic certifier

Contact the AQIS accredited certification organisations and discuss the following:

- The criteria for organic or biodynamic certification.
- Your certification needs.
- Export market destination requirements.
- Costs associated with certification.
- Procedure and timing before certification can be granted.
- Obtaining a copy of the organic farming or processing standards to which your farming or processing system must comply.

Each certifying organisation has slightly differing requirements, although all comply with the minimum AQIS national standards.

2. Understand organic standards

It is very important understanding of organic farming principles and knowledge of practices and inputs permitted as well as those prohibited under the certifier's organic standards.

3. Modify the production system

Changes to the production system must be implemented where conversion is required.

Whether converting an established vineyard or creating a new organic vineyard, the grower must prove that an appropriate system is in place and successfully operates in compliance with the organic standards.

4. Apply for certification

Once organic standards have been applied in the farming system, application for organic certification of the system can be submitted.

Upon receipt of an application the organic certifier organisation will issue a farm questionnaire seeking all relevant details describing the farming system.

Information sought in the questionnaire typically includes land use history, rotations, inputs used, details of farming practices and a map of the property and surrounding land use.

The questionnaire forms a Statutory Declaration relating to farm practices and inputs used.

5. Undergo farm inspection

A site inspection by an experienced organic farm inspector will follow soon after the questionnaire has been returned to the certification organisation.

The purpose of the site inspection is to verify the details of the farming system as described in the questionnaire and to ensure the grower has a good understanding of the principles and methods of organic farming

Apart from discussing the farming system, the inspector will view paddocks, crops and livestock as well as equipment, sheds and storage areas.

The grower must also provide complete documentation of all inputs used, output produced and sales details for all organic products.

This documentation will then be audited.

Soil samples or tissue samples may also be taken for testing.

6. Receive a farm inspection report

Following the farm inspection the inspector compiles a report confirming details of the farming system that has been established.

This report, together with other relevant documents, is considered by the certifier to determine the appropriate level of organic certification.

Specific conditions may be imposed where certain practices or circumstances require attention

7. Enter an organic certification contract

The certifier then offers the grower a contract stating the land and crops to which the certification applies and any conditions that must be met.

Acceptance of the contract and payment of fees allows the grower to market relevant product labelled as certified 'in conversion' or 'organic' and bearing the logo of the certifier.

CONVERSION PERIODS



Obtaining the right to use the words "organic in conversion" on labelling will take at least 12 months from application for certification.

To obtain a certificate enabling use of the word "organic" in labelling will generally take a minimum of 3 years.

These times can be reduced in special circumstances where the grower can provide solid documented evidence their production system complies with the certifiers' standards.

The duration of CONVERSION

Start CONVERSION

date of commitment

IN CONVERSION

24 MONTHS between the Beginning and the HARVEST dates

ORGANIC PRODUCT

36 MONTHS between the Beginning and the date of HARVEST

OBLIGATIONS

Any operator wishing to refer to the AB on products must:

- be inspected by an approved Certifying Body. (who gives him the certificate of commitment or a copy of the license)
- notify the Bio Agency (notification form to be sent before April 30 for farmers already organic or in conversion)

THE CONTROLS

One visit per year + 50% visit sun expected.

- Records, accounting, land
- Analyzes
- Minimum / conventional distance

WINEMAKING

There are two possible approaches to making wine from organic grapes

Firstly, organically certified grapes can be processed into wine using conventional means but with a minimum of chemicals and additives.

Wine made from this process is labelled 'made from organically grown grapes', not as 'organic wine'.

Currently, this is the most common alternative as it is relatively easy to do in a conventional winery.

The second alternative is creating true 'organic wine'.

This is done with organically certified grapes in accordance with a code of organic winemaking practice endorsed by the certifier and meeting the National Standard.

Some conventional winery practices may have to be modified in order to comply with these standards.

FOR CERTIFICATION OF WINE AS 'ORGANIC' AS FOLLOWS:

- 1. Annual Statutory Declaration:** A declaration must be completed for each batch of wine by the winemaker when seeking approval to use the term 'organic'. The declaration relates to grape supplier details such as name, certification number, production methods and details of accreditation.
- 2. Wine processing agreement:** The winemaker and bottler agree to comply with procedures and practices required for organic wine (see winemaking section)
- 3. Delivery declaration:** This provides the winemaker and bottler with proof that the grapes or wine delivered were sourced from an organically certified vineyard/winery.
- 4. Winery inspection check list:** A qualified person, usually a professional winemaker, inspects the winery to ensure that the approved practices are being followed.
- 5. Certification checklist and approval form:** This ensures that the winemaker's statutory declaration has been cross-checked to the vineyard and that the grapes have been grown according to organic principles.
- 6. Certificate of compliance:** Certifies that the wine has been made in accordance with organic production regulations (see wine making section).
- 7. Two bottles of finished,** labelled wine from each certified batch must be submitted to the be tested for residues and the other stored for reference.



8. Penalties for breaches of the standards are similar to those applied to grape growers.

For winemakers, if the breach is accidental, accreditation for the batch of wine is revoked and stocks must be withdrawn from sale until claims of organic certification are removed.

If the winemaker's breach is intentional, membership is revoked for two years and any certified wine must be removed from sale until claims of certification are removed.





PRINCIPLES AND PARTICULARITIES ORGANIC VITICULTURE

Conversion changes

Use
exclusive of
original
products
natural for the
pest control



Tillage
and / or mastery
of a cover
vegetable for
Management
weeds



Fertilisation
thanks to
fertilizer
organic and
mineral
fertilizers
of natural
origin



In an organic viticulture system vines are considered as part of a complete ecosystem, with emphasis on the following:

- Quality rather than maximum yield.
- Maintenance of an ecologically diverse environment which includes plants, fungi, microorganisms and animals.
- Caring for the soil using sod and cover crops, mowing and mulching. No herbicides are used and many weed species are regarded as useful for nutrient cycling and supporting a diversity of soil activity.
- Preventing pest and disease problems using biological management, and pruning and training systems to improve canopy aeration. In emergency situations insecticides and fungicides with the least impact may be applied.
- Careful planning of vineyards to reduce potential problems. This involves choice of site, rootstock, variety and training system.
- The reduction of pollution by avoiding synthetic chemicals.
- The strengthening of vines using various herbal preparations.



Things to consider

- type of wine to be produced
- the grape varieties preferred
- grape growing conditions - climate
- availability of good quality water
- proximity of wineries and/or tourist roads
- isolation from sources of contamination
- disease, pest and weed burdens
- amount of sunlight
- suitability of soil
- air drainage

THE SUCCESS OF ORGANIC FARMING LIES TO A LARGE EXTENT IN PLANNING

VINE MANAGEMENT PRACTICES

BIOLOGICAL CONTROL METHODS FOR PEST MANAGEMENT IN VINEYARDS

SOIL AND NUTRIENT MANAGEMENT

Practical measures for good prophylaxis

- Promote biodiversity
- Thoughtful pruning of the vine (good circulation of sap, future of the vine)
- Early stem suckering (elimination of the "downy mildew scale" from the soil to the vine)
- Selection of buds defining the load and limiting future crowding (disbudding and splitting)
- Crushing of the plant cover (or passage of a roller) before it reaches the head of the foot (humid atmosphere)
- Homogeneous training and delimitation of the cluster area
- Trimming absent or few and as late as possible
- Respect for the natural annual cycle of the vine and its needs (nitrogen supply, etc.)
- Possible leaf stripping

BIOLOGICAL CONTROL METHODS FOR PEST MANAGEMENT IN VINEYARDS

Monitoring is an essential aspect of vine management in any vineyard - but it is doubly important for organic growers.

Regular and detailed monitoring of the vines is paramount in maintaining vine health and gaining early warning of potential pest or disease attack.

Insect pest control

Insect control in organic vineyards must avoid synthetic chemicals and depend on natural means

- Wasps or mites that parasitize or attack pests, usually at the caterpillar stage, are preferred treatments : Trichogramma wasps can be imported as eggs on cards to control caterpillars of pests such as lightbrown apple moth
- *Bacillus thuringiensis* (BT) is a well-known control for caterpillar pests such as the light brown apple moth.
- Pheromones (natural chemical sexual attractants) are commonly used to attract flying male moths and disrupt their breeding cycles. They are also used as an aid to monitoring pest numbers.



Grapevine diseases

- Downy mildew
- Powdery mildew (oidium)
- Botrytis

Disease management

- Young vines needed to be sprayed for powdery mildew using sulphur (wetable powder any commercial line) and canola oil
- Some leaf plucking was required around bunches on older vines
- Sprays were applied on average every fortnight until hot and dry conditions prevailed. In cool, wet conditions sprays were applied every 10 days
- Started spraying just after bud burst. The first two sprays were a copper hydroxide /sulphur/oil mix. Then reverted to copper hydroxide - copper oxychloride is allowed but discouraged.
- Pruning used to allow air and light into bunch, reducing conditions for disease.
- All sprays are preventative there are no apparent control spraying.
- Copper/sulphur preventative sprays are used 4-5 times, some years 6-7 times.
- Copper hardens tissue, sulphur for powdery mildew at 1-8 kg wet table powder and copper hydroxide at 1-2 kg/hectare.
- Could model and monitor disease but is labour intensive. Prefer preventative treatment.
- Birds can be a big issue for small vineyards and nets may be essential. For large vineyards they become less of an issue - large areas of grapes dilute effect.

SOIL AND NUTRIENT MANAGEMENT

Fertilisers

Under an organic system, nutrients, in the form of organic matter, rock phosphate, fish emulsion and other allowable forms are fed to the soil so it can be broken down by microbial soil activity and made available to the plant in a slow-release form

Allowable nutrient inputs include:

- compost,
- fish by-products,
- rock phosphate,
- wood ash,
- gypsum,
- lime and various forms of seaweed.

Biological material added to the soil should generally be composted by natural means.

Composting is essential for animal manure and materials brought onto the property from noncertified sources. Mulching materials applied to the soil surface do not have to be composted but their use must be documented

NUTRIENT INPUT PROGRAM

- Applied compost around young vines at one tonne/hectare and inter-row for three-year-old vines at eight tonne/ hectare.
- Applied commercial rockdust at recommended rates. Local basalt dust used at higher rates.
- Dolomite used for pH management.
- Rock phosphate applied pre-establishment and in three to five year rotation, after five years soils change.
- Blood and bone applied to young vines at a rate of 500 g/vine to help promote growth. Do not apply when mature. Rate needs to be adjusted if blood content of locally supplied blood and bone changes.
- Locally made fish fertiliser applied through drip and as foliar spray.
- Seaweed applied (as for fish fertiliser) for disease control.
- Earthworm castings applied.

CASE OF THE NITRATES DIRECTIVE

Measures to be observed:

- Spreading ban periods
- Maximum quantities of nitrogenous fertilizers
- Registration documents
- Maximum amounts of organic nitrogen from livestock effluents
- Spreading conditions

Fertilizers - Soil amendments- Phytosanitary products

Documents to be submitted to the controller:

- Product data sheet and / or label and / or bag,
- Delivery note and / or invoice and / or signed certificate from the supplier.

Pest control, diseases :up stream management and prevention

- Choice of appropriate species and varieties
- Protection from natural enemies of parasites(ex: plot development, hedges, nest boxes, dissemination of predators, ..)
- Optimized driving: technical route overall
- Ecosystem control: Know the levels population (traps, visual checks)

Conversion timeline and aspects organic grape cultivation and winemaking
(Understanding the procedure of registration for organic production, transition and certification. Working with documents.)

Conventional wine

Conventional wine covers all wine that cannot be categorized to a particular production style, such as organic wine production.

Conventional wine is the most commonly consumed category of wines that includes all the different types, such as white, red and sparkling wine.

The International Organization of Vine and Wine gives the following definition for wine:
“Wine is the beverage resulting exclusively from the partial or complete alcoholic fermentation of fresh grapes, whether crushed or not, or of grape must. Its actual alcohol content shall not be less than 8.5% vol.” (OIV 2012b.)



Organic wine

- Organic wine is wine made from organically grown grapes without use of any synthetic fertilizers, synthetic plant treatments or herbicides.
- The use of genetically modified organisms or ionizing radiation is forbidden.
- All the substances used in the process need to follow the organic rules.

Organic wine sector

The world of wine is commonly divided into two widely known production regions:

The Old World (largely Western and Southern Europe) and the New World (outside Europe, mainly North America, South Africa, Chile, Australia, Argentina and New Zealand).



Regulation

Regulation to codify organic wine (203/2012)

- Use of 100% organic raw materials. (Grape, MC, MCR, Wine alcohol)
- Restrictions or prohibitions on the use of certain physical processes.
- A short list of additives and oenological aids in favouring for some an organic origin. "It is a regulation that is controlled by an organization state-recognized certifier."



Labelled organic wine has met with certain standards.

In Europe organic wine production is regulated with common rules concerning all EU member countries

At the moment the following countries have similar rules for organic wine making as compared to EU: Argentina, Australia, Costa Rica, India, Israel, Japan, New Zealand, Switzerland and Tunisia.

In addition, EU and USA have signed a unique collaboration contract allowing organic wine trade

Currently all organic products in the EU area must bear the EU organic logo to be marketed and sold as organic (Europa 2012)

RULES FOR THE CHOICE OF OENOLOGICAL PRACTICES

R. (CE) 834/2007 Article 6

Specific principles applicable to food processing organic food

In addition to the general principles set out in Article 4, the production of food organic processed is based on the following specific principles:

- a) produce organic food from ingredients for organic farming, except when an ingredient is not available on the market under a biological form;
- b) reduce the use of food additives, ingredients not biologicals having mainly technological or organoleptic functions, as well as micronutrients and processing aids, so that they can be used as little as possible and only when there is an essential technological need or special nutritional purposes;
- c) exclude substances and processing methods likely to induce in error as to the true nature of the product;
- d) exercise caution when processing food, preferably using biological, mechanical and physical.

REDUCTION IN THE NUMBER OF AUTHORIZED PRACTICES

Annex I A of 606/2009 deleted

Use of physical methods for SO₂ removal

Use of sorbic acid

Using PVPP

Use of lysozyme

Use of potassium ferrocyanide and calcium phytate

Use of D, L-tartaric

Use of caramel

Use of paraffin discs

Using the DMDC

Use of mannoproteins

Use of electrodialysis for tartaric stabilization

Use of urease

Substances authorized for use

One of the most disputed additives within the organic wine industry is the sulphite compound.

Sulfites are added to wine as preservatives to prevent spoilage during several stages of the winemaking.

Sulfur dioxide (SO₂) protects wine from oxidation and bacterial growth

The maximum sulphur dioxide content in organic wines have exceptions and limitations that are explained precisely in the EU commission implementing regulation EC No 203/2012 and EC No 606/2009.

Wine category	Residual sugar	Max SO ₂
Red	< 2 g/l	100 mg/l
Red	> 2g/l	170 mg/l
White and rosé	< 2 g/l	150 mg/l
White and rosé	> 2g/l	220 mg/l
Liqueur	< 5 g/l	120 mg/l
Liqueur	> 5g/l	170 mg/l
Quality sparkling		155 mg/l
Other sparkling		205 mg/l
Sweet (spätlese, auslese, etc.)		270-370 mg/l

EC No 203/2012 and EC No 606/2009





PRODUCING ORGANIC WINE

Conversion

A conversion period from conventional to organic agriculture is at least 36 months

Making the wine

Control in the vineyard and cellar as well as knowledge of oenology helps the winemaker to find the best practices for producing consumer safe and environmentally friendly wine of a high quality.

Red wines are often easier to produce with low-input methods as they have naturally antimicrobial and therefore antioxidant agents that protect the wine from spoilage.

Red wines often reach a higher alcohol content than white wines and furthermore contain antioxidant tannins, which preserve the wine from being spoiled

Organic winemaking

The following products are allowed for organic wine production, as long as no more suitable techniques and aids are available:

- Air, oxygen in gas form for ventilation
 - Centrifugation - Filter Aids: Perlite, Cellulose, Kieselguhr
 - Inert gases: nitrogen, carbonic acid, argon
 - For fermentation: pure breeding yeasts, di-ammonium phosphates, thiamine hydrochloride (fermentation aid)
 - Sulfur dioxide, potassium bisulphite or potassium metabisulphite
 - Charcoal (clarification)
 - For clarification: edible gelatine, plant egg white of wheat or peas, bubble, protein, albumin, tannins, casein, potassium caseinate, silicone dioxides, bentonite, pectolytic enzymes
- Additives and treatment agents: lactic acid, tartaric acid, Aleppo pine resin, L-ascorbic acid, citric acid, tannins, gum Arabicum, Potassium Bitartrate, Cupric citrate, coppersulphat, Potassium Alginate, Metawine acid

Harvesting:

- ✓ If the grapes are machine harvested, the harvester must be washed out with water prior to operation. The grapes must be harvested in a manner that prevents contamination with undesirable metals, plastics, chemicals or dust.
- ✓ The time of day grapes are harvested will ultimately influence the quality of the wine. **White wine grapes** are often harvested in the cool of the night to prevent oxidation while red wine grapes may be allowed to warm up to allow full flavour development.

Transport:

- ✓ Organic grapes must be transported in uncontaminated containers.
- ✓ If the containers have been used for conventional grapes, they must be thoroughly cleaned out to avoid possible contamination before they are used for organic grapes.
- ✓ If transported any distance, the grapes may need protection using potassium metabisulphate.



Production I:

- ✓ Organic winemakers are unable to use the full range of materials available for conventional winemaking so attention to hygiene and careful handling in the winery is paramount.
- ✓ However, organic winemaking techniques are much the same as those used for conventional winemaking
- ✓ At the winery, the grapes must be crushed without delay to prevent spoilage. Crushing equipment must be made of inert material (eg stainless steel).
- ✓ Inert equipment must also be used to drain and press the grapes.
- ✓ The crusher must be washed with water before processing an organic batch. Pectinolytic enzymes may be used. Juice can be clarified by chilling and settling in the conventional manner.
- ✓ Additives and processing/processing aids allowable for organic winemaking are listed in the following table.
- ✓ It is important to note that sulphur dioxide is acceptable as a preserving and antioxidation agent but free sulphur dioxide must not exceed 30 mg/L and total sulphur dioxide must not exceed 125 mg/L. It is allowed only in the gaseous form or as a solution of the gas.
- ✓ Ascorbic acid may also be used as an antioxidant.
- ✓ Yeast for fermentation may be obtained from commercial sources but some makers prefer the yeast naturally present on the grapes.

Production II:

- ✓ After fermentation the wine may be clarified using most of the normal processes. Bentonite, egg white, isinglas, skim milk and gelatine are among fining materials that may be used to help clear and stabilise the wine. Use of inert gas - carbon dioxide or nitrogen - is encouraged to prevent contact with air at all stages of winemaking.
- ✓ All handling and bottling equipment and procedures must be designed to minimise contamination or modification of the wine. Barrels may be cleaned only with water while sulphur dioxide should only be added to empty barrels in gaseous form.

The winemaker must keep detailed records of all winemaking activities, transfers and additions, and details of storage vessels used. The winery and bottling facilities must be inspected and certified by an accredited organisation before being used to produce organic wine.

The winery or section of a larger winery used for organic wine should not be used for conventional wine production at the same time.

Organic wines should be kept separate from other wines

Inspectors are likely to be needed on-site when organic wine is bottled

Unfortunately, this can add to the cost, making certification of organic wine more expensive

Winemakers must be prepared to also submit to subsequent inspections to ensure compliance with regulations and provide samples of wine for analysis as required



Quality

The quality of the grapes determines the ultimate quality of the wine. There are many factors that influence both grape quality and the wine making process

Labelling

If wine is labelled as 'organic', it must have been produced under approved conditions specified by the certifying body referred to on the label.

This implies that the organisation concerned has inspected the vineyard and winery and certified them as Organic.

In many cases the winemaking process is not certified and wine is labelled only as 'made from organically grown grapes'.