

What is natural wine?

"drinking a great wine should be like shaking hands with a mountain -
you're drinking the very land where the vines grow, not the attenuated expression of
a winemaker's ego."
-andrew jefford

to me that is the perfect answer to the question - what is natural wine?

well, I said "no experience required" so let's have a very quick overview of wine -
In very general terms, wine is an alcoholic drink made by fermenting the juice of fruits or
berries. Red wine usually comes from red grapes (and the skin contact of those red grapes with
the juice.) White wine usually comes from white grapes - skin contact not required.
Ok so now we have a basic understanding (PS if you want more info, send me an email and I'll
send you my wine info packet)
Sadly, this is not where wine begins or ends - and all the questions listed below (plus a ton
more, I'm sure) are where sommeliers, wine buyers, servers, bartenders, wine drinkers,
collectors - honestly, anyone who enjoys a glass of wine) - well, anyway, this is where the
debate begins.

what is the grape?
- there are over 2000 documented native varietals in Italy
alone where are the grapes are grown?
- slope? valley floor? south facing? etc.
etc. how are the grapes grown?
- irrigated? dry-grown? on what rootstock? etc.
etc. mechanical harvest? hand sorted?
what is the yeast
strain? are there
added sulfites? oak?
what kind?
fined? filtered? and if so, how?

I mean I could go and on - sadly, those are just SOME of the questions people think to ask. I've
rarely heard anyone ask -
what kind of SO2 (sulfites)?
did you use reverse
osmosis? BM45?
CY3079?
were any eggs used?
were any anti-foaming agents
used? powdered tannins?
oak chips?
did you water
back? or use
trypsin?
Seriously, I could go on AND ON!!!

and yes, I'll tell you what all that is (and more) so don't worry-see the last page!

A very dear friend of mine once told me that raising the question is just as important as having
the answer - I want us to have an honest dialogue about natural wine - in about 30 minutes! So
I'm going to ask you to give me the next 30 or so minutes of your time without interruption.
There is a pad of paper in front of you (if you missed grabbing one, go get one now)....write any
questions that arise down and I promise we'll get to them.

Wikipedia (which as we all know is the absolute authority on everything - LOL!) says:

"Natural wine is wine made with minimal chemical and technological intervention in growing grapes and making them into wine. The term is used to distinguish such wine from organic wine and biodynamic wine because of differences in cellar practices. All natural wines are, however, farmed organically at a minimum and many growers are biodynamic in the vineyard as well.

Strictly speaking, natural wines are wines that are produced without adding or removing anything during winemaking, although some growers add tiny quantities of sulfur at bottling.

Organic wine is organic in the sense of having been produced made from organically grown grapes, but may be subject to chemical and physical manipulation in the winemaking process"

And technically this is true - but how do we know what is "natural" and what is biodynamic and organic and and.... it can get a bit exhausting so let's break it down.

Most people believe organics came before biodynamic but modern organic agriculture actually came out of the series of lectures given by Rudolf Steiner that created the biodynamic movement. Those lectures were published in 1924 - in English in 1928. Rudolf Steiner died in 1925.

Biodynamic often gets a bad rap - I don't know why but I think it is probably because the guy who wrote the book on it was deeply spiritual but not as a christian. Not relevant to our conversation but interesting, he was also one of the early detractors of Hitler - in fact, Hitler hated Steiner and threatened him on several occasions.

And probably because the traditional winemakers want to poo-poo it cuz it threatens the status-quo and the money machine they've got going.

So, brief overview of biodynamics: Farmers in Germany asked Rudolf Steiner for help when they noticed a severe degradation in their soil quality, crop health and livestock. He gave a series of 8 lectures on organic agriculture which are now widely believed to be the first lectures on organic agriculture. Steiner had previously studied at the Vienna Institute of Technology (1879-1883) - he studied mathematics, physics, chemistry, botany, biology, literature, and philosophy (now that's full-load - no wonder he never graduated)....whew!

The basic premise of biodynamics is that the farm is seen as a whole organism, not as separate parts within the farm....more than organic. Therefore the farm should be as self-sustaining as possible, producing its own compost, animal feed, etc. So, plant or animal disease is viewed as a symptom of problems within the whole organism and should be treated as such.

Steiner also suggested the timing of agricultural activities such as sowing, weeding, and harvesting to utilize the influences on plant growth of the moon and planets; and the application of natural materials prepared in specific ways to the soil, compost, and crops - the intention being to engage non-physical beings and elemental forces. My 2 cents - no one doubts that the moon affects the tide - why do we doubt that the moon has an affect on other living things? especially ones that contain a high percentage of water

so, perhaps the non-physical beings and elemental forces is where the crazy accusations come from but keep this in mind - Rudolf Steiner also gave lectures and is largely responsible for the inclusion of holistic therapies as part of a standard medical regime. He believed that there are influences affecting the world that we might not be able to pinpoint or that science can prove. He believed that these influences should be taken into account. He also encouraged his listeners to question him - to try it for themselves. Demeter was born out a foundation he formed to test his theories.

Out of these lectures and the foundation studies came what we now call organic farming.

So if "Organic wine is organic in the sense of having been produced made from organically grown grapes, but may be subject to chemical and physical manipulation in the winemaking process" what does that mean when you see an organic wine label?

Very simply, organic farming practices are simply just no synthetically produced chemical fertilizers or pesticides in the field or for our purposes, the vineyard. The winery has no such rules. Also so called "naturally produced" fertilizers and/ or pesticides are allowed in the vineyard - "naturally produced" meaning they were derived from a natural product like bone meal from animals or pyrethrin from flowers or trypsin from the pancreas of pigs or cows. (btw, none of the so-called natural derivative have to come from naturally raised product - for example, trypsin is a derivative of the pancreas from pigs and cows. These animals are NOT humanely treated or fed organically.)

I mean, aspirin comes from a natural derivative but most of us wouldn't consider taking aspirin to be holistic or organic. Tamoxifen (a cancer drug) also comes from a natural derivative but I can tell you from experience, there is nothing natural about what that drug does to your body.

And let's keep in mind that just because the grape comes to the winery "organic" does not mean it stays that way - we'll get to all the horrific winemaking techniques later.

so we've laid the very basic ground rules and hopefully you have a elementary understanding of wine and of biodynamic and organic agricultural....put that in the back of your mind for a few more minutes

let's talk about winemaking for a quick minute

Without looking it up on your super-smart phone:

do you know what Potassium Metabisulfite or Sodium Metabisulfite is? How 'bout an Acid Blend? Campden? Energizer (hint: not the battery)? a Yeast Nutrient? Amylase Enzyme? Sparkolloid? Bentonite? Dimethyl dicarbonate? Erythorbic acid? Carboxymethyl cellulose? Gum Arabic? Trypsin (that's a give away - answer above!)?

These are just a **FEW** of the 74 additives or "winemaker tools" allowed in winemaking. And quite a few of them are allowed in organic wine. The list of things allowed in wine is unbelievably long and I said I was only going to take 30 minutes.

So I'll leave that topic for another lecture - keep this in mind:

most of us here care deeply about food - we care about where it comes from even if it's just to sell it to our guests. I would venture that most of us in this room try to eat from the farmers market (especially in the summer!), we support the local farmer and try to and probably even read labels!

I know that sometimes we break the rules - we eat the cheap Chinese food or crappy burger on occasion but as a general rule, we care about what we put in our bodies.

So why don't we care about what is in our wine? or booze in general? But this is a wine lecture so we'll stick to that for now.....

There is no label that tells us what is in our wine. We assume it's just grapes, right? I mean we know there was yeast involved cuz that's what makes the alcohol.

And maybe, we even drink local wine thinking we're doing the right thing.

But very few of us are saying "hey, what's in this wine?" "did you use oak chips to add tannin?" "did you inoculate with genetically modified lab-created yeast?" " did you use Erythorbic Acid?"

I encourage everyone to google biodynamics - read the detractors and skeptics & read the proponents and believers. Be educated about what you put in your body! about what you believe

"is this natural?"

There is a movement happening - mostly in Europe but it's coming here - it's a community of people who are not only asking the questions but a community of winemakers who are eschewing "traditional" winemaking techniques - who are making and drinking NATURAL WINE!

Ok - Ok - so what is natural wine?

Getting ready for this lecture, I found myself hard pressed to find a succinct answer. When we travel for the wine business, we get to meet natural winemakers of every kind. From the quiet farmer who is making wine to the more polished winemaker who is also a farmer, they all have a hard time telling you exactly what it means.

But every single one agrees with these basic principles:

nothing in - nothing out = wine is very literally made in the vineyard

no fertilizers or pesticides in the vineyard

only natural yeast

no additives or intervention in the vineyard or in the winery

They differ on the addition of sulfur but NONE of them think you should add anything even close the amount of sulfur added and allowed by the general wine making community even the organic wine making community.....

SO2 (sulfur) and sulfites

there are 2 kinds of sulfur:

naturally occurring sulfur (volcanic sulfur)

and not naturally occurring (aka - a petrochemical product="relating to or denoting substances obtained by the refining and processing of petroleum or natural gas") = the gas you put in your car creates the sulfur added to your wine.

and the amounts of sulfur used varies widely. Most conventionally made wine contains far more petrochemical by-product sulfur than you could imagine and while "normal" tends to be around 80mg per liter, up to 350mg per liter is allowed.

Sulfites are created during the fermentation process so all things fermented contain sulfites.

and if there is more than 10mg per liter, you must put "contains sulfites" on the label.

So, there is no 'rule' or way to know how much sulfur is used or if the sulfur contained is natural or not....

I could go on and on - I know I keep saying that but I really do care about the earth and I really do love wine so... we'll save the conversation about all the crap they put in wine for another time.

At the end of the day, if we care about what we eat, how do we not care about what we drink?

Yes, some natural wine is "weird" and some of it is flat out bad. And having spent the last 10 years or more, I have found that most of it is honestly, out of sight - it is delicious! even the weird ones!! and once you start drinking natural wine, it is really hard to taste - let alone drink - the chemically produced wine that makes up 90% or more of the wine on shelves or lists today.

Natural wine tastes alive - it is alive! And it is the very definition of Andrew Jefford's beautiful quote..... so, I'll end my contribution to this dialogue today with the quote above and just in case you missed it.....

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you're drinking the very land where the vines grow, not the attenuated expression of a
winemaker's ego."***

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Definitions, information and resources:

Potassium Metabisulfite: main use for the chemical is as an antioxidant or chemical sterilant.

USES:

- * a common wine or must additive, in which it forms sulfur dioxide gas (SO₂).
- * used in the textile industry for dyeing and cotton printing.
- * Potassium metabisulfite is sometimes used to precipitate gold from solution in aqua regia (as an alternative to sodium sulfite).
- * It is a component of certain photographic developers and solutions used in photographic fixing.
- * It is used as a bleaching agent in the production of coconut cream

"Potassium metabisulfite causes skin irritation, serious eye irritation, and may cause respiratory irritation. Hence, it should be manipulated under individual protective elements, such as gloves, coat, mask and glasses. Also, it should be manipulated under alkaline conditions as potassium metabisulfite reacts with acids, liberating toxic gases."

Sodium Metabisulfite:

it's main use is as a disinfectant, antioxidant and preservative agent.

biggest difference between sodium and potassium metabisulfites - sodium metabisulfites leave behind sodium and potassium leave behind (you guessed it) potassium

Campden tablets: (potassium or sodium metabisulfite) - a sulfur-based product that is used primarily in wine, cider and beer making to kill bacteria and to inhibit the growth of most wild yeast: this product is also used to eliminate both free chlorine, and the more stable form, chloramine, from water solutions (i.e., drinking water from municipal sources). Campden tablets typically contain 0.44 g each of sodium metabisulfite (plus filler) and 10 of these are equivalent to one level teaspoon of sodium metabisulfite. Other related substances are sodium/potassium sulfite/bisulfite.

Acid Blend: a granulated blend of the three most commonly found fruit acids: citric acid, malic acid, and tartaric acid. It is added directly to a wine or must to raise its acidity level when necessary.

Energizer: Yeast Energizer helps to create a more solid and rapid fermentation. It is a blend of nutrients proven best for berry, mead, herb and vegetable wines. The Yeast Energizer will increase the flavor qualities of these wines and also allow you to achieve higher alcohol levels. Yeast Energizer is also ideally suited for re-starting a stuck fermentation.

INGREDIENTS: *Diammonium phosphate* (CAS 7783-28-0), yeast hulls, magnesium sulphate (CAS 7487-88-9), vitamin B complex, tricalcium phosphate (CAS 1306-06-5).

Diammonium phosphate (DAP) is also the world's most widely used phosphorus fertilizer. Created by a controlled reaction of phosphoric acid with ammonia, DAP also acts as a fire retardant. For example, a mixture of DAP and other ingredients can be spread in advance of a fire to prevent a forest from burning.

DAP is used in various industrial processes, too, such as metal finishing. And, it's commonly added to wine to sustain yeast fermentation and to milk to produce cheese cultures

Yeast Nutrient: assist the wine yeasts in producing a complete and rapid fermentation. It is recommended for use in all fermentations. Yeast Nutrient also provides a singular source of nitrogen for the yeast to utilize during the fermentation process.

INGREDIENTS: Di-Ammonium phosphate (CAS 7783-28-0) (Formula: NH₄-2HP04)

Amylase Enzyme: converts starches and other complex carbohydrates into fermentable sugars. It can be used in either wine or beer, and in mashes that are to be distilled.

INGREDIENTS: Alpha-amylase (CAS 9000-90-2) and beta-amylase (CAS 9000-91-3)

Sparkolloid: has a positive static charge which allows it to drag negatively charged particles to the bottom. Works as a good follow up to Bentonite which has a negative static charge. Or, it can be used on its own in white or blush wines to add brilliance and luster to its appearance.

INGREDIENTS: a blend of polysaccharides and diatomaceous earth.

Bentonite: makes the wine clearer, more stable, and more drinkable sooner. Also reduces off-flavors, oxidation and post-bottling sediment. Bentonite is a clay that has the unique ability to remove fine, undesirable particles from a finished wine in a very short period of time
INGREDIENT: Bentonite (CAS 52623-66-2)

Dimethyl dicarbonate: a colorless liquid with a sharp odor. Its primary use is as a beverage preservative and or processing aid or sterilant (INS No. 242). Expected to be toxic by inhalation. Corrosive with symptoms of coughing, burning, ulceration, and pain.

It is often used as a preservative in wine as a replacement to potassium sorbate to stop wine spoilage yeasts such as *Brettanomyces*.

Erythorbic acid: a stereoisomer of ascorbic acid. It is a natural product, a vegetable-derived food additive produced from sucrose. It is denoted by E number E315, and is widely used as an antioxidant in processed foods. The relatively high sulfur dioxide content of bottled wines is detrimental to aroma and flavor. This can be avoided by intelligent use of erythorbic or ascorbic acid

Carboxymethyl cellulose: a cellulose derivative with carboxymethyl groups ($-\text{CH}_2-\text{COOH}$)

bound to some of the hydroxyl groups of the glucopyranose monomers that make up the cellulose backbone. It is often used as its sodium salt, sodium carboxymethyl cellulose.

It is used during wine processing to inhibit the formation and growth of potassium bitartrate crystals (those pesky clear crystals one used to find in wine sometimes) which could precipitate after bottling.

Gum Arabic: a natural gum made of the hardened sap of two species of the acacia tree. The major application of *gum arabic* in winemaking is to stabilize young red wines against colour pigment precipitation

Trypsin: an enzyme which is a protein that speeds up a certain biochemical reaction and is found in the small intestine of livestock. It can also be made from fungus, plants, and bacteria. But it is usually made for commercial purposes from the pancreas of livestock. In medicine, trypsin removes dead skin cells (tissue) and allows healthy tissue to grow. In wine, trypsin is used to reduce or to remove heat labile proteins - in other words, used to fine and clarify wine so it's not too cloudy or hazy.

Reverse Osmosis: Reverse osmosis (or RO for short) is one technique they can use to reduce the alcohol without changing the fruit flavors and other elements in the wine.

In RO, wine passes through a filter—a really, really tight filter. Water and ethanol are the smallest molecules in wine, so they pass through the filter most easily. Some forms of acid also pass through, but most elements—including color, tannin and, basically, flavor—do not. (These elements are saved for later use.)

Then the colorless and tasteless water and alcohol mixture is distilled to separate the alcohol from the water. The water is then recombined with the color, flavor and tannins. Result: a small batch of wine with reduced alcohol.

This small batch is then blended back into the rest of the wine, thereby diluting the alcohol without losing any of the flavor elements (and only a tiny percentage of the volume

Anti-foaming agents: dramatically reduces the amount of foam occurring during a fermentation: perfect for situations where a fermenter's head-space is limited.

INGREDIENTS - FG-10 (Dimethylpolysiloxane silica, sorbic acid, benzoic acid, stearate emulsifier, alginate emulsifier, and water)

Powdered tannins: literally tannins in powder form usually derived from tea leaves or powdered oak. Often added when new barrels are not affordable. The same powdered tannins are used to stain furnishings.

Oak chips: Granulated, Oak Powder is used to give your wine the effects of oak barrel aging, without the oak barrel. These oak chips are often treated with formaldehyde.

Water back: to have water added to the wine (called 'watering back') to reduce the alcohol concentration in the completed wine

BM45: lab created yeast - an Italian isolate that is recommended primarily for Sangiovese and extended maceration wines. A slow starter and moderate fermenter, BM45 has high nutritional needs and therefore should be used in conjunction with Go-Ferm (AD342) and Fermaid K (AD345) in order to minimize H₂S production (*hydrogen sulfide*-a colorless and toxic gas responsible for the odor of stinky eggs). BM45 contributes higher acidity, low astringency, and due to its' high levels of polysaccharide production, resultant wines have great mouthfeel and improved color stability. In addition, it can also be used to minimize vegetal characteristics that may be present in the fruit. In red wines, BM45 brings out aromas described as fruit jams, rose petals and cherry liqueur, with notes of sweet spices, licorice and cedar. While this makes it perfect for creating traditional Italian wine styles, BM45 also excels in Cabernet Sauvignon. When making white wines, some producers use this yeast on Chardonnay as a blending component of the yeast inoculate to increase mouthfeel, but care for proper nutrients must be taken. It should be noted that BM45 may produce a "gamey" quality immediately post alcoholic fermentation, that will age out in about 6 months.

CY3079: lab created yeast - a steady, slow fermenter even at cold temperatures (13°C). This yeast greatly benefits from using rehydration and complex yeast nutrients designed for use during fermentation. When properly fed, CY3079 has good alcohol tolerance (up to 15%) and is a low producer of VA and H₂S. It is recommended for barrel fermented Chardonnay and sur lie aging. Chardonnays produced with CY3079 have rich, full mouthfeel and are characterized by aromas of fresh butter, almond, honey, white flowers and pineapple.

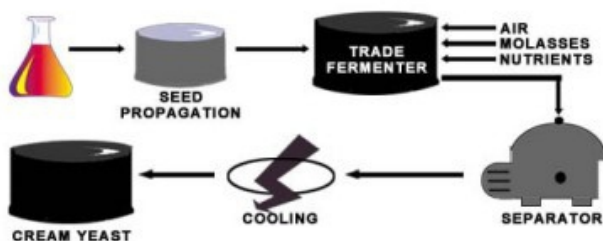
Yeast: a complicated subject so here are the basics:
wild aka. natural yeast is everywhere - it is in the air we breathe, on trees, on leaves, on unsprayed fruit and vegetables, on bark, on your skin, on your dog - I mean EVERYWHERE!
Have you ever seen the white film on backyard grapes? That's wild yeast. The same film can be found on juniper berries. For centuries, both berries have been used as a natural "start" for bread yeast.

Technically speaking, yeast is a single fungus and it's the first domesticated living creature in history. Modern science has identified well over a 1,000 different varieties of wild yeast. These organisms are so small that hundreds of millions, if not billions, fit into a single teaspoon.

But not all yeast varieties are the same. For example, the yeast used to make beer is not the same kind of yeast used to make bread. Yeast to make wine is vast and varied. Different natural yeasts have different flavors - some are strongly sour, some are mildly sour, and some are not sour at all. Some are better at raising breads than others.

A tool in the conventional winemaker's belt is yeast. It is selected based on the flavor profile the winemaker is looking for in that particular wine. Thought that cabernet tasted like because it was from Red Mountain - well, maybe a little but a lot of that flavor in your mouth is because of the yeast-strain that was chosen by the winemaker.

Below is an image of how yeast and various yeast-strains are made in a lab:



Now tell me that's natural - nope, can't cuz it isn't. What was once natural (in this case yeast) is now lab-created to give the winemaker the tools necessary to create the wine he or she wants to create " **the attenuated expression "of his or her ego**.....certainly not the natural product you thought you were drinking.

This is no way a complete list of additives and tricks used in winemaking..... and I am not an expert..... soooooo, please DO YOUR OWN RESEARCH!!

A few interesting facts:

Arsenic found in wine ::: <https://www.cbsnews.com/news/lawsuit-claims-high-levels-arsenic-found-some-california-made-wines/>

soil harbors 80% of the world's biomass - earthworms alone amount to close the entire weight of all other animals combined.

Since 1950, EU numbers have decreased from 2 tonnes of earthworms per hectare to less than 100kg.

when agriculture began nearly 6,000 years ago, 12% of the planet was covered in desert. Today 32% is covered in desert over half that number (2 billion hectares) was created in the 20th century.

2 separate studies (PAN-2008: UFC-Que Choisir-2013-consumer watch groups) found pesticide residue in the wines they tested - in amounts 200 times higher than the accepted standard for the drinking water of the United Kingdom.

Some of the residue was carcinogenic, developmental or reproductive toxins or endocrine disruptors.