

## Chapter 1

# Making Great Wine at Home

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### *In This Chapter*

- ▶ Looking at making cheap wine versus really good wine
  - ▶ Thinking of yourself as a winemaker
  - ▶ Running through an overview of winemaking
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**T**hese are the greatest days for wine consumers in the 8,000 years of wine drinking. Wine quality around the globe has increased exponentially in the past three decades. Good-to-great wine at affordable prices fills the shelves at supermarkets and wine shops, and if you can't find the wine you want down the street, chances are you can find it on the Internet. Today's wine fans have access to a vast range of vintages, regions, and price points — lucky us!

So why go to the trouble of making your own? Back in the day — oh, let's say Crete in 3,000 BCE — if you wanted wine, you made your own. And for much of Western Europe, that was the norm well into the 19th century. But that was when people also chopped their own wood, milked their own cows, grew their own string beans, stitched their own clothes, and built their own huts — things most of us no longer do for ourselves, but pay someone else to do for us. Wine has gone off the chore list and onto the shopping list.

Because we're surrounded by good wine, you need to be motivated to get your hands — and arms and legs and clothes and everything else — dirty to produce your own. You also need a serious passion for wine, an intense curiosity about the miraculous chemical reactions, an urge to get closer to nature and away from the pre-packaged life, or some other motivation of your very own. Full disclosure: Making wine takes a fair amount of work, requires considerable patience, generates amazing messes, and involves endless cleaning — so your motivation matters.

I got interested in drinking wine — or in paying attention to what I was drinking — in order to impress my father-in-law, who knew his way around a bottle of wine. When I started writing about wine, I realized that if I was going to criticize other people's wines, I had to make some myself (which not enough wine writers do). A couple harvests into it, I noticed how much satisfaction I was getting from working with my hands, back, and senses — a whole different life-discipline from the desk work I'd always done. A dozen

years later, my little home winery, known as subterranean cellars, is the center of its own social scene, halfway between a community and a flash mob, where people get together to crush grapes, bottle wine, and eat, and drink . . . in moderation, of course.

Did I mention that making your own wine is a ton of fun?

## *Choosing to Make Cheap Wine or Really Good Wine*

When you decide to take the plunge, a defining question quickly arises: What kind of wine are you going to make? I don't mean deciding between grape varieties; I mean, are you doing this to save money on wine, or are you shooting for home wine good enough to compete with the pros?

Saving money on your adult beverage expenditures and making premium quality wine aren't mutually exclusive; many home winemakers do both. But these two divergent paths present themselves again and again, in the many small decisions you make — by the end of a vintage, they add up. Some home winemakers want to economize; some want to prove they can keep up with the big players. Your humble author is squarely in the second camp.

### *Making wine to save money*

Making your own beer can be a bargain, because the principal ingredient is water. But for wine, it's grape juice, which costs a lot more than water. The big money-saver, of course, is labor — yours — which presumably comes free. Plus, your home winery has little need for advertising and marketing, because you can't sell your wine. Nor will you be sending many samples to wine writers. (Though if you do, please include me on your list.)

Cheap-track homies can try to cut costs and corners in several ways:

- ✓ Look for bargains on grapes or get free grapes through friends.
- ✓ Follow a standard routine from harvest to bottle, and don't bother testing or tweaking each batch along the way.
- ✓ Soak and scrape labels off every wine bottle you empty.
- ✓ Bottle the stuff as soon as it's drinkable, or sometimes just draw it out glass by glass straight from the barrel.

These points describe how several generations of Italian, German, Iberian, and Central European families made their own wine in their basement or



garage in the New World for decades. You can use this approach, too, and end up with drinkable wine — most of the time — but not much more.

If you're thinking of following any of these methods to save costs, keep these points in mind:

- ✓ Getting free grapes often indicates the fruit is of poor quality.
- ✓ Skipping the testing substitutes guesswork for control, often leading to unpleasant surprises.
- ✓ Scraping labels off old bottles can work, as long as you get them really, really clean before you re-use them; new bottles are a huge work-saver.
- ✓ Bottling too soon, before your wine has stabilized, can mean unpleasant surprises in the bottle.
- ✓ Keeping wine in tapped barrels, full of air, is a recipe for vinegar production.

So yes, you can — and will — save money by making your own wine. But if saving money is your only motivation, your wine will show it.

## *Making really good wine*

There is no reason whatsoever why you can't make one stellar wine after another in your humble home winery.

The wine doesn't care where it's made; it just cares how good the grapes are and whether the winemaker is paying attention. True, making wine on a very small scale presents its challenges, and making great white wines in particular without refrigeration and strict oxygen control takes some doing. But you can easily make wines that hold their own with wines that cost \$15 or \$20 in the marketplace. You just have to think like a pro.



Making great wine isn't mainly a matter of spending money or buying fancy equipment. The key is attention to detail, constant tasting, and asking yourself at a hundred different choice points, *What can I do to improve this wine?*

Just as in cooking, or most anything else, if you start to think like a professional, the quality of your handiwork improves. Okay, positive thinking alone won't make you a major-league shortstop or the next Meryl Streep, but it absolutely will make you a better winemaker.

Commercial winemakers have great economic motivation to get the details right. If they cut too many corners, the wines suck, the owners get mad, and the winemakers become unemployed. If you mess up in your garage, you feel bad, and you lose a few bucks, but your world isn't in flames.

Which means you have to pay attention to your wine out of love, not out of fear. Is that so hard? With this book as a guide, of course not!

## *Getting into the Home Winemaking Mindset*

Successful home winemakers are as diverse as the wine they make. They work with different grapes in all manner of facilities, from impressive to laughable. And they're happy to quarrel with each other about the value of this or that technique. But they all share a few common mental traits, some of which come easily, some of which may take a little adjustment in thinking.

### *Surrendering to the grapes*

Most home winemakers are city folk, oblivious to the rhythms and hazards and realities of agriculture. Home winemaking provides an education in a hurry. Grapes rule, and you had better get used to it.

And because grapes are the heart and soul of your undertaking, they may cause you to adjust how you think about a lot of things:

- ✓ **The weather:** You don't worry about whether you need a raincoat, but about whether your future grapes are getting rained on, or suffering a heat spike, or are about to be wiped out by frost.
- ✓ **Vacations:** You no longer go away in the Fall; sorry, you have grapes coming in.
- ✓ **Your schedule:** Grapes ripen when they're good and ready, not when you schedule them. I virtually guarantee that when you arrange for a day off from work to pick up your prize fruit, the grower will call the night before and change the date, and then change it again. Get used to it.
- ✓ **Disappointment:** When you get the grapes, they may be full of mold, too ripe or not ripe enough, or have spent eight hours cooking in the blazing sun before you get them. These are winemaking challenges, remedies for which I cover throughout this book.
- ✓ **Your vision:** That is, your hopes and dreams for the wine you're about to make. Your grapes will have the characteristics they have, not necessarily those you envisioned. You may have to scale back your plans for a fat, jammy Zinfandel because the barely-ripe fruit won't support that style. Your goal of a lean, mean Sauvignon Blanc may have to be scrapped for plan B because of the high-sugar grapes. The Merlot you got to fill your new oak barrel turns out to be 2 gallons short of capacity.

Trust me, you're going to love it.

Good news: Nine times out of ten your harvest will go just fine. But winemaking is unpredictable, and you have to listen to your grapes. With beer, you can just decide to make a nice Pilsner, get the supplies, follow a recipe, and schedule the bottling in a couple weeks. You can't do that with Chardonnay — exactly why winemaking is so compelling. (Chapter 23 highlights other differences between making wine and brewing beer.)

## *Developing patience, precision, and a little chemistry*

The chief difference between home winemaking and home brewing is the turnaround time: Beer takes a couple weeks; wine, even in small batches, takes months — three or six or twelve or eighteen! For most of that time, your winemaking tasks consist of . . . waiting. The biological and chemical processes that make wine take a while, and you can only speed them up so much. Winemaking is like baseball: slow and drawn out, with lots of spaces between spurts of action. You get time for reflection and the opportunity for tactical adjustments.

You also need patience because the harvest comes only once a year, so you only get that one annual shot. If you decide to try a different approach and the wine doesn't work out, you have to wait a year for the next crop of grapes — you may be looking at five years of trying to get a particular wine absolutely right. Winemaking is not a craft you pick up over a long weekend.

Winemaking, even with the most modern equipment, lives by ancient rhythms. For some people, the slow-motion pace is intolerable; for some of us, it's mighty relaxing. The stretched-out timeline has the advantage of leaving plenty of opportunity to think before you leap. You have time to work through the zillion little details that can affect your wine for good or ill. Your fruit is your fruit; in the cellar, you're in charge, and little things count.

For thousands of years, people made drinkable wine without having a clue about the underlying biochemistry. (They were also short on running water and indoor plumbing.) Learning a tiny bit of chemistry — the basics of the solids and liquids you're working with, how they interrelate, and how oxygen and temperature affect things — gets you on top of what's going on, gives you more control, and helps you predict the results of a particular operation.

Remember that details matter in winemaking. Find out your juice and wine's makeup: How much sugar do the grapes have, how much acidity, what's the pH? (I tell you how to measure these things in Chapter 3.) When fermenting, find out the temperature of the juice/wine, and if it's too high or too low, fix it. If the yeast manufacturer says to rehydrate the yeast before using it,

rehydrate it. When you add sulfur dioxide as a preservative, don't just add "some," add an amount correlated with the pH of the wine. Weigh, measure, and do the math two or three times (and do it on paper!).



As the winemaker, you can only do so much to influence your wine; why not do it right? If you take care of your wine as you make it, your wine will pay you back when you drink it.

## *Tasting and talking about wine*

The most important equipment you can apply to winemaking is your senses — smell, taste, and sight. Just as winemaking is in service to the grapes at hand, all the scientific biochemistry stuff is in the service of the senses — how the wine smells and tastes as it develops.



You don't master the art of winemaking out of a book, not even the fine one you have in your hands. You develop your skills with your nose, your mouth, and your memory of sniffs and sips.

As you seek out good deals on equipment (see Chapter 3 for more about equipment), you may want to upgrade your own sensory equipment — not by organ transplants, but by practice. One of the most useful things a winemaker can do is taste other wines, and try other grapes, styles, regions, and vintages.



I think taking a wine appreciation class should be mandatory for home winemakers. Classes in wine styles, wine regions, and how to taste wine are readily available from community colleges, wine shops, and wine education centers; seek one out. Training in how to sniff out common wine faults — what oxidized wine or hydrogen sulfide smell like — is also valuable. Most wine appreciation classes cover these things, and kits of reference samples of good and bad odors are also available (see Appendix C).

Most everyone can smell and taste, but few of us are born with the vocabulary to describe what's in a glass. Putting words to wine is one of those activities that resembles dancing about architecture — it's another world and, at best, indirect. The more you do it and the more you say out loud what you're tasting, the easier it gets. Plus, to make wine you really like, you have to learn how to describe it. Appendix A can help you find the right words.



Learning the lingo is important because your most important task as a home winemaker is to taste, taste, taste as your wine moves from grapes to bottle. Testing is useful to know what's going on in your fermenter or barrel, but the only way you really "know" your wine's mood and plans is through your nose and your mouth. This is, by the way, one of the great joys of home winemaking: Tasting your wine all along the way, not just starting with the finished, bottled product, nice as that is.

## *Aiming high*

The final aspect of the home winemaking mindset is aiming high. Set out to make something that is more than just technically wine. Set out to make good wine you can be proud of. Because you can.

The first time people make their own wine, they tend to worry that something will go haywire. But when they're done and the finished product actually tastes like wine, it's a revelation! (Not quite up there with giving birth, but at least as big a deal as learning to ride a bicycle.) The next year, with more confidence and tricks up your sleeve, you're going to make even tastier wine. By your third harvest, if not sooner, you'll be making wines that are varietally correct — your Merlot really tastes like Merlot, your Pinot Grigio like Pinot Grigio — and hold their own with the offerings at the local wine shop.

You're gonna love this hobby.

## *Going from Vine to Glass*

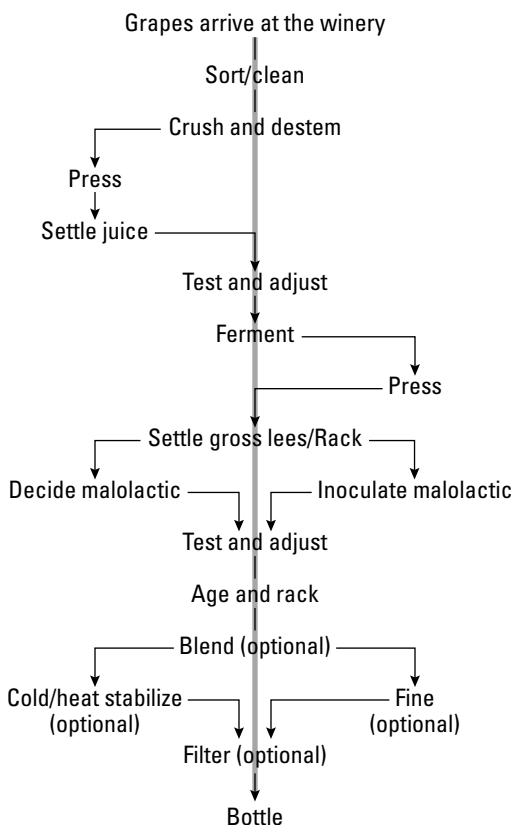
Figure 1-1 gives you a short overview of what you'll need to do in your home harvest, start to finish. The sections that follow flesh out the basic steps.

## *Practicing “safe” winemaking*

Winemakers endlessly debate the merits of *reductive* winemaking — where oxygen is kept as far out of the picture as possible — and *oxidative* winemaking — where the useful role oxygen can play is maximized. Wine philosophers go round and round about *natural* winemaking — with little or no intervention — and *manipulative* or *industrial* winemaking — where technology is brought to bear at every point.

This book promotes *safe* winemaking. I want to maximize the chances that you'll produce a clean, stable, expressive wine and minimize the chances that you'll produce a microbial playground. Consequently, I advocate that you use commercial yeast strains, not whatever yeast happens to live in your garage. I want you to go out of your way to worry about oxygen exposure and temperature control, and use sulfur dioxide to safeguard your wine against alien microbes. Equally important is that you do a lot of testing to supplement what your nose and palate tell you, and, above all, remember that you can never do enough cleaning. You can make wine at home in many ways — I discuss alternatives throughout this book — but safe winemaking is absolutely the way to start.

## BASIC WINEMAKING DECISION TREE

*Whites**Reds*

**Figure 1-1:**  
The whole  
winemaking  
process in a  
flowchart.

## Getting grapes

No grapes, no wine. (I reveal the few exceptions in Chapter 2.) Purchasing grapes doesn't take a lot of time, but deciding about them should. What kind of wine do you like to drink? What are your options for fruit sources? Can you find a wine someone else made from that vineyard and test it out? What other grapes might be good to have around as potential blenders?



Put some time into researching your grapes. Even though this book is all about what to do after you have the grapes, I can't stress enough how much the quality of your wine depends on the quality of the fruit.



## *Getting outfitted*

Before your grapes arrive, you need to think through all the equipment and supplies you will need and plan on whether to beg, borrow, rent, buy, or steal it — no, forget that last option. You can acquire some equipment as you go — renting a press at the time of fermentation, or picking up some fix-it agent only when a problem arises. But you can stockpile supplies that you know you will need: a container to ferment the fruit or juice in, a vessel to age the wine in, tubes and hoses for moving liquid around, basic chemicals, a scale, and buckets (lots of buckets). That way you're ready ahead of time. Chapter 3 runs through lots of options.

## *Measuring grape chemistry*

When the grapes are harvested, or at the latest, once you have them home and crushed and can measure the juice, you need to test for the basic parameters:

- ✓ **Level of ripeness**, measured in *degrees of Brix*, essentially the percentage of sugar by weight.
- ✓ **Total acidity (TA)**, normally measured in grams of acid per liter.
- ✓ **pH**, a measure of the electrical ionization of the juice, which you can think of (roughly) as the inverse of the total acidity. (That is, the higher the TA, the lower the pH, and vice versa.)

These three parameters have normal ranges and problem ranges, and the only way to find them out is to do simple testing. You may need to make adjustments to the grapes and juice before you do anything else: Add water if the sugar is ridiculously high, add acid if the pH is too high, and so on. Chapter 5 walks you through these adjustments.

## *Destemming, crushing, and pressing*

Home winemaking takes physical work. The three stages where grapes could not become wine without forceful human intervention are during the destemming, crushing, and pressing.

You want to use the grapes, not the stems, so step one is *destemming*, stripping off the berries and separating them from the stems. Most often, the same continuous process also *crushes* the grape berries, which isn't nearly as violent as it sounds. What really happens is that the skins get cracked and the juice starts oozing out, which is a good thing because the liquid is what ferments. Gentler crushing is generally better; you're not making a smoothie.

After destemming is where white wines and reds part company. Whites generally go immediately to *pressing*, squeezing out the juice, which is clarified by gravity settling, then fermented on its own. Red wines ferment with their skins, allowing for extraction of color, tannin, and other goodies that won't come out on their own, no matter how nicely you ask. Reds go to press after fermentation, not before.

Juice ready for fermentation is known as *must*. White must is simply juice, red must is juice with a slurry of skins and pulp and seeds floating around in it. To go from must to wine, the juice goes through fermentation.

## *Witnessing the miracle of fermentation*

The period of *fermentation* — during which yeast cells transform sugar into alcohol, among other things — is brief, intense, and absolutely critical to the final wine. Technically speaking, this is the *primary* or *alcoholic fermentation*, to distinguish it from the optional secondary, malolactic fermentation. Your job is to set it on a good course and then watch it happen.

Grape juice exposed to air will start fermenting on its own, because yeast cells and other critters that love a sugar high are everywhere. For controlled winemaking, standardized, commercial yeast strains do a much more predictable job. Look for suggestions for good yeasts to use with specific wines in the chapters where I discuss those wines.



Dried yeast works best when briefly rehydrated before it goes into the must. And most winemakers also add some packaged yeast nutrient to keep the little workhorses happy. The yeast cells multiply quickly, and within a day or two, their activity will be evident: You'll hear and see it bubbling — releasing carbon dioxide — and smell wondrous fermentation aromas.

Done on a home scale — fermentations of a few hundred pounds or less — red wines take roughly a week to ferment, white wines two or three weeks. During that time, winemakers have to pay attention to temperature — which generally means ensuring red fermentation temperatures get up into the 80s Fahrenheit (around 30° Celsius) and whites stay down under 60°F (16°C). Because the yeast and must may not produce the desired temperatures on their own, you may need to be creative with heating and cooling — electric blankets, tubs of ice water, swamp coolers, and so on. Monitor progress in the fermentation twice a day for temperature and for the drop in Brix, as more and more sugar turns to alcohol. (If the fermentation stops, or slows to a crawl, head for Chapter 6 where I give tips on troubleshooting.)

When white wines have fermented to *dryness* (all the fermentable sugars have gone to ethanol), the yeast slowly dies off from the lack of sugar and the toxicity of the alcohol. The yeast then slowly falls to the bottom of the fermentation vessel, partially clarifying the new wine. When reds are dry, the wine gets pressed off the skins and put into containers for aging.

## *Performing a post-fermentation tune-up*

After the wine is dry, another round of decisions comes onto your agenda. You measure basic wine chemistry again, with emphasis on the post-fermentation pH and total acidity. You may need to make further adjustments.

This is also the time to take action on the mysterious matter of *malolactic fermentation* (the transformation of malic acid from the grapes into softer lactic acid, by way of certain bacteria — Chapter 7 takes you through malo). Nearly all reds go through malolactic, and so do some whites including most California Chardonnay. Your choice is stylistic, but either way, you need to promote malo or stop it in its tracks; leaving it to chance means unstable wine which can explode in the bottle later on. Don't go there.

Once the malolactic issue is resolved, give your wine a stiff dose of sulfur dioxide (SO<sub>2</sub>), the amount based on the wine's pH, to shut down further microbial activity. Sulfur dioxide math is the subject of Appendix D.

Also, at this point you implement your strategy for aging your wine — in carboys, stainless tanks, beer kegs, or barrels. All containers have their pros and cons, which I weigh in Chapter 8. Before heading to the chosen aging vessel, whites and reds both generally get a *racking* (siphoning the cleaner wine off of the sludgy mess at the bottom of a container) to get rid of the *gross lees*, which are the thickest, funkier remains of the expired yeast.

## *Aging and blending*

Now your wine sits for a good long spell. Your main job during aging is to sniff the wine and taste it periodically and to think about whether it might need some minor tweaking. Also, make sure whatever containers you're using are topped up so that very little air is between the wine and the top of the container. Your sniffing sessions may also identify some things you'd just as soon not have in your wine, so you may need to take remedial action (details on that in Chapter 8).

Dead yeast and other stray stuff in the wine continue to fall to the bottom (thanks to gravity) so periodically, your wine gets racked, keeping the wine and losing the sludge. Depending on the wine, you'll do two or three or four rackings over the course of three to twelve months. Time and rackings won't get your wine crystal clear, but they'll get it most of the way there.

As your wine ages and its true character emerges and stabilizes, you may want to consider *blending* — adding a bit or even a lot of some other wine or wines to your pride and joy to make it even better. Blending is a great resource for home winemakers who don't have hundreds of barrels or thousands of gallons of wine to pick from. (Chapter 8 has plenty of suggestions about blending options and procedures.)

## *Finishing and bottling*

When your wine is ready for prime time — normally three to six months for whites, six to twelve months for reds — some final prep steps may be in order. Several substances are available for *fining* (cleansing the wine of one or more compounds), which can help get the wine clear, stabilize it against heat and cold, and remove excess tannin and other unwanted elements.

Another option is *filtration*, mechanically removing particulate matter from your wine by running it through a filter under pressure. Filtration isn't absolutely necessary, but helps with wine appearance and stability, and gives the whole project a more upscale gloss.

Bottling is another exercise in good sanitation, and a fine opportunity to recruit some friends into an assembly line.

## *Thinking beyond bottling*

Bottling your wine is by no means the end of the process — it's just the start of a new one. Sure, you drink some of it immediately. But you also need to figure out how to store it, how long to age it (if at all), and whether to enter some into competitions. You need to get samples of your handiwork to your grape growers and wine equipment suppliers, who made it all possible. You can have great fun comparing your wine with the commercial competition and pick up some new ideas in the process.

And, of course, you need to start planning your next harvest.