

Beginning Brewing Class

By Brewmaster Timotheus Zacharia von Schloss Zwilling

What is brewing?

Brewing is the technique for turning sugar into alcohol (fermentation); other added ingredients will give you the distinctive tastes and smoothness.

• Wine / Mead

- All fruits contain sugar. Depending on when you harvest the fruit it will have more or less sugar. Which will give you a dry (least amount of sugar), fruity (medium amount of sugar), or sweet (most amount of sugar) wine.
- Mead is made with honey as the sugar and normally uses no fruit.
- Most wines are 8-14% alcohol.
- Wine has been discovered that was made over 10,000 years ago.
- Most modern brewing methods are the same as was used in period, we just better designed equipment that helps prevent spoilage, contamination etc. Historically most wines were 4-7 % alcohol. Mostly they were not processed to remove sediment, so were not clear and had a slight yeasty flavor.

• Beer / Ale

- Beer and ale are made from barley, wheat, or other grains. Heating the grains turns their starches into sugar, mostly resulting in a fruity taste. Hops are added as a preservative.
- Most beers are 3-9% alcohol.
- Beer has been discovered that was made over 20,000 years ago.
- Most modern brewing methods are the same as was used in period, we just better designed equipment that helps prevent spoilage, contamination etc. Historically most wines were 2-5% alcohol % and most had a slight yeasty flavor. They tended to be brewed that morning or sometime in the last 2-3 days.

• Distilling

- Distilling is the process of taking already fermented drinks and upping the percentage of alcohol by removing some of the other liquids.
- Beverages are usually distilled by boiling or freezing.
- It is thought that distilling goes back about 5500 years, but probably goes back farther.
- In the USA it is illegal to distill alcoholic beverages -- if you do the "revenuers will get ya".

What / how much can you brew legally?

- One person per household can legally make 200 gallons of Beer and/or Wine -- combined.
- You may not sell it. You may serve it, but some restrictions apply.
- You may enter your alcohol into competitions, and are allowed to gift up to 20% of your production.
- You are not allowed to move it over state lines.
- Fines and penalties are stiff, including losing all your assets (including your house).

How brewing works -- Fermentation process

- Yeast is a simple group of 1-10 cells that eats sugar, and releases alcohol and carbon dioxide.
- If it has oxygen along with the sugar, it will create more carbonation in the alcohol, and a lower alcohol percentage.
- If it has no, or small amounts of, oxygen, it will produce no carbonation, and a higher alcohol percentage.

What you need

- A brew log. Every ingredient (recipe), any research (historical notes), Bibliography, Log notes (everything you do to this brew).
- A glass five-gallon bottle. A glass bottle will not impart a taste to the beverage as plastic will, and five gallons is a satisfactory amount of beverage. Plastic is workable for any brewing under 4 months but it does breath and wines can be contaminated. If you need to buy the bottle it will cost you from \$20 to \$60.
- An air lock. When filled with water, the gases caused by fermentation escape upward through the lock but air cannot go back down. Usual cost: \$1.00 to \$1.75
- A cork or rubber stopper to hold the air lock in place (you want to seal the bottle neck). Usual cost: \$.50 to \$2.
- Bottles! This is what you are going to put the beverage in when finished; we will discuss these more later. Usual cost: \$15 to \$25 per dozen.
- A siphon hose. This should be at least six feet long. It will permit you to move the beverage from one container to another. Usual cost: \$6 to \$12.
- Bottle corks. These will prevent the beverage from being contaminated or from escaping once bottled. We will discuss these later also. Usual cost: \$.53 for one and \$100 for 1,000.
- A corker. This inserts the cork into the bottle, or is a very bad brewing joke. (Ed. – Bad brewing jokes may cause serious injury). Usual cost: \$20 to \$40.
- Yeast. There are many different types of yeast and each will do something slightly different. We will discuss yeast a little later. Usual cost: \$.50 to \$2.75.
- A hydrometer. This device will allow you to determine just what you percentage of alcohol actually is. It looks like a giant thermometer but it reads the specific gravity of the fluid. Usual cost: \$10 to \$35.
- A funnel. The funnel will help you to get your beverage from one opening to another much more easily. Usual cost: \$2 to \$10.
- A large cooking pot. An enamel pot is best. A stainless steel pot will work almost as well, but is more expensive. Do not use an iron pot because the iron will cause major taste changes. Usual cost: \$45 to \$125.
- A thermometer. This is a highly necessary item that will let you know when you can add yeast or transfer the beverage to another bottle. Usual cost: \$8 to \$16.

Ingredients / Flavor modifications

- Use fresh ingredients that are clean, and have been grown without insecticide.
- **Sugar:** 3 pounds per gallon = fruity, 2 pounds = dry, 4 pounds = sweet.
- **Different sugar sources:** White sugar, Toronado sugar, Brown sugar, Honey, Corn syrup, etc.
- **Fruits:** Almost any fruit works well for fermentation.
 - HOWEVER,
 - Beware of bananas; it is VERY difficult to clear the banana pulp from the finished drink.
 - Also strawberries have very fine seeds that can clog the air lock and cause the airlock to leave the carboy at pressure, adding a lovely red tinge to any walls, furniture, or whatever is in the area!
- **Grains:** Beers and Ales you a variety of different grains, each imparting a different flavor and texture to the finished drink. Different hops and malt, will also affect the flavor and texture. So there are LOTS of variants to play with!
- Additions of acids (citric acid, malic acid, etc.) alters flavor and affects how the yeast works.

Additives

Yeast Nutrient: Kind of like a B12 shot, it energizes the yeast and helps it work more efficiently...

Citric acid: Yeast likes some acidity.

Malic acid: Balances acidity and alcohol.

Tartaric acid: Is a preservative.

Sulfides and sulphites: Used for cleaning equipment, to stop fermentation, and as a preservative. **However**, they can also cause extreme problems for people with asthma.

CLEAN EVERYTHING!

I don't know how to stress this enough. At least 85% of all brewing problems can be traced to not having cleaned your equipment well enough.

You can use any of the following:

- Campden tablets (Sulfides) at five per gallon; OR
- Potassium metabisulphite (Sulphites) at five ounces per gallon; OR
- Star San sanitizer OR
- A very light mixture of bleach and water OR
- Hot Water

With any of these methods, rinse the items very well in hot water, and then they will be ready to use.

Basic Recipe -- Mead

The easiest beverage to brew, with the highest chance of success, is mead. However, there are exceptions to every rule. This is a wine made from a mixture of water and honey. The basic recipe for mead is as follows:

- Bring **4 ½ gallons of water** to a slow and mild simmer.
- To this simmering water, slowly add **13 pounds of honey**. Don't just dump it in; pour it, stirring constantly so that it doesn't lump or burn.
- Stir the mixture every five or ten minutes, keeping a good eye on the surface. At some point the mixture will begin to foam. This is caused by the impurities in the honey rising to the surface of the mixture.
- Skim the surface continuously until the foam stops forming; this will take from ten to twenty minutes. As soon as the foam stops raising you are done cooking the mixture. Shut the stove off and let the mixture cool.
- When the mixture cools to about 110 degrees (remember, you needed a thermometer!) siphon it into a **five-gallon glass bottle** (Carboy).
- Wait for the mixture to cool to 90 degrees, and then add the **1 package Montrachet yeast**. Wait another ten to fifteen minutes then stir the mixture.
- Assemble the **stopper and airlock**, fill the lock with water, and put the airlock on the bottle.
- Hide the Carboy in a closet somewhere. The primary fermentation will continue for about three weeks. You will probably wish to go through secondary fermentation. When there are no more bubbles forming in the airlock, the fermentation has finished.
 - It's now time to put the brew into bottles and cork them. Some people drink the results right away, but the best results will come from a little ageing. Just three to six months can smooth the brew out and make a very nice beverage.
 - Now, the above recipe sounds pretty simple, even it does contain a number of steps. But you will find that there are so many things that might go wrong that you may want to use your brew for a hair tonic (to replace the hair you'll pull out).

Care of your carboy

- Keep in a warm place 70-85 degrees.
- Accidents do happen, don't place the carboy near anything that you'd hate have infused with its contents. (Ask Tim about his mom's new dining room carpet!)
- Do not jostle the carboy around or move it much.
- Keep the air lock on until you bottle the drink, and keep it half full of water the whole time.
- To avoid sediment in your bottled drink, do not move your carboy within a week of your bottling date.

Bottles and bottling

- In most cases you will want a green or brown colored glass bottle. The color helps prevent sun damage to your drink. Unlike other type bottles, glass doesn't impart any extra flavor into your drink.
- Unless you making a carbonated drink you only need regular flat bottomed bottles. The "punt" (indentation in the bottle bottom) is only needed to deal with the pressure of a carbonated drink.
- Before you start bottling, assemble all of your equipment: the bottles, the corks or caps, the corker or capper, the carboy, and the siphon hose.
- Put the bottles, carboy, and siphon hose on a towel or other surface that you mind getting messy as there is spillage.
- Keep the carboy bottom at least 6 inches higher than the top of the bottles -- it's a gravity feed system.
- Place the siphon hose in the carboy, with its end ABOVE the sediment on the bottom of the carboy; you don't want to transfer any of the sediment into the bottles!
- Siphon the brew to the bottles, leaving at least 2 inches of airspace at the top of the bottle.
- To avoid too much loss of drink: As you get each bottle filled up, "cap" the end of the siphon hose with your thumb and move it to the next bottle.
- Set up and fill no more than 5 bottles at a time to avoid leaving bottles open too long, and exposing them to too much oxygen. Cork those bottles and move on to the next group.
- When you start seeing sediment raising to your siphon hose, stop filling bottles, you don't want that in your drink.

Care of bottled drink

- Store in a relatively cool place 60-75 Degrees.
- Store bottles standing up, if keeping them less than 5 years. Unless you are using rubber corks, after 5 years store the bottles on their sides to keep the cork from drying out.
- You'll want a label for your bottles to identify which batch is which. It's helpful to include:
 - Your brewery name -- Make one up ... it's fun!
 - Your name -- If you don't want a brewery name
 - Name of Brew -- Not "Blueberry Mead" but "Blueberry Madness"
 - Sulfides -- If you've used sulfates or sulfides (even as a cleaning agent) include that info, in case you share or gift it with someone who has problems with them.
 - % of alcohol
 - Date it started fermenting -- the Vintage!
 - Type of Drink -- Beer, wine, mead, ale, etc.
 - Batch # -- For your control purposes

Aging

- Patience is a virtue for brewers and homebrew drinkers: Most drinks benefit time spent sitting in the bottle before consumption. The flavors mix and ripen and the drink smooths out.
- Some drinks benefit from 6 months sitting in the bottle before consumption. some 2 months, some 2-5 years.
- Here's the fun part: Do a controlled experiment for each new recipe you make.
 - Put a future consumption date on each bottle,
 - As each date arrives, invite friends over to taste it with you.
 - Keep a listing of the results in your brew log.
 - When you've done, check the results: when did the drink taste best?
 - 2 weeks after bottling,
 - 4 months,
 - 1 year?

That gives you a good idea of how long to age future batches of that recipe!

And it's a great excuse for a party!

Now: Go forth and experiment!

--Timotheus, ChiefTimotheus@gmail.com