Mead for beginners – Ben Hansen and Betty Fisher

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Equipment:

- Non-Aluminum and non-cast-iron pot or tub for mixing
- Closeable airtight oxygen blocking container for fermentation
- 2nd closeable airtight oxygen blocking container for aging
- Non-metallic non-wood (non-porous) stirring method
- Siphon tube – with or without racking cane
- Bottles with caps or corks for bottling and service
- Airlock – rocker style or S-style.

Sanitization:

- You *can* use bleach 1tbs/gallon (4mL/L) – soak 20 mins then rinse several times with clean filtered water
- StarSan mixed according to directions – 30 sec contact time then drain, no rinsing required
- Iodophore/Iodine 1tbs/5gal (16mL/20L) – 10 mins contact time then drain fully to dry, no rinsing required
- Heat/Steam pressure cook (autoclave) – for glassware only – 20mins at 15lbs in pressure cooker. Cool mouth down on clean sanitized cloth.

Types of yeast:

- Top Fermenting Ale Yeast – Saccharomyces Cerevisiae
  - Likes warmer temps closer to 65-70F
  - Contribute esters for added flavors
- Bottom Fermenting Lager Yeast – Saccharomyces Uvarum (formerly sac. Carlsbergensis)
  - Cooler temps – basements and cellars 55-65F
  - 'Clean' fermenting yeasts – less esters
- Wine Yeast
  - Various ale and lager yeasts adopted by the wine industry over the years
- My favorites – from Lalvin – available at Von Klopp brew shop – local, hard to get to, off of 52 south of Pine Island. Only accessible from the southbound lanes… Or buy online.
  - EC-1118
  - D-47

Yeast produces more than just alcohol. The most notable of these byproducts are, of course, ethanol (alcohol) and carbon dioxide (CO_2); but in addition, a large number of other flavor compounds are produced such as:

- acetaldehyde (green apple aroma)
- diacetyl (taste or aroma of buttery, butterscotch)
- dimethyl sulfide (DMS) (taste or aroma of sweet corn, cooked veggies)
- clove (spicy character reminiscent of cloves)
- fruity / estery (flavor and aroma of bananas, strawberries, apples, or other fruit)
- medicinal (chemical or phenolic character)
- phenolic (flavor and aroma of medicine, plastic, Band-Aids, smoke, or cloves)
- solvent (reminiscent of acetone or lacquer thinner)
- sulfur (reminiscent of rotten eggs or burnt matches)

Ingredient Selection: or If you wouldn't eat it, don't ferment it.

- Clean ingredients
  - Honey with no wax or pollen – or as little as possible
  - Filtered & de-ionized water – low hardness is best
- Adjuncts
  - Clean washed fruit without any rotting – you can precook the fruit in a bit of water (steamed not boiled) for 20 mins if uncertain. Add both the fruit and the cooking water to final batch to prevent flavor losses.
  - Fresh herbs/spices if using them – old dried herbs may contain mold and mildew spores
  - Tea – black teas can add acidity, herbal teas for flavors.
  - Yeast nutrients (fermaid-K and Urea)

Fermentation Life Cycle:

- Rehydration
  - Use a 50% diluted solution of your fermentation product
  - Temp below 85F
  - OK to prove for several hours or even overnight
- Reproductive phase
  - Needs LOTS of O2 (oxygen) during early yeast lifecycle as it is reproducing and filling the empty space in your mead
  - Feed your yeast! Provide sufficient vitamins, minerals, and Nitrogen for the yeast to grow up healthy and strong. Without doing complex chemistry to determine free nitrogen just follow the manufacturers suggestions on quantity and addition intervals if multiple additions are specified.
  - pH – Nothing super complicated here but Yeast likes a slightly acidic environment of between 4.5 and 5.5 – Just mixing honey and water at 3lbs per gallon gets you right about there. Use pH paper available at your local brew store is you are really interested.
- Alcohol Production
  - AIR and OXYGEN are BAD!!!
  - Use and airlock so that once the yeast passes from reproduction to alcohol production your mead will always have a protective blanket of CO2.
  - Most of the sugar will be consumed in 7-10 days, but its not done yet! Loads of alcohol precursors have been formed that the yeast will continue to "chew" on and make more alcohol as well as removing compounds that have undesired flavors – see Tasting.

Aging:

- Bulk age as long as possible – post bottling every bottle is a microclimate and will age differently. If most of the aging is already done in bulk, then the bottled product will be much more consistent bottle to bottle.
- Aging allows for complex processes where large unstable compounds break down into simpler compounds that typically have more 'mellow' flavors.

Tasting / off Flavors:

- acetaldehyde (green apple aroma)
  - Too young – lots of intermediate products still unfinished by the yeast
  - Weak yeast – feed better at start of fermentation – aerate the Must well – shake, shake, shake!
- diacetyl (taste or aroma of buttery, butterscotch)
  - Some yeast strains make more diacetyl than others
  - Too slow fermentation possibly check temp appropriate for yeast selection
- dimethyl sulfide (DMS) (taste or aroma of sweet corn, cooked veggies)
  - Protein and fats in the Must – in mead this is from pollen and wax
- phenolic (flavor and aroma of medicine, plastic, Band-Aids, smoke, or cloves)
  - clove (spicy character reminiscent of cloves)
  - fruity / estery (flavor and aroma of bananas, strawberries, apples, or other fruit)
  - medicinal (chemical or phenolic character)
  - Almost all phenolic off flavors are due to sanitization issues, but some can come from particular strains of yeast for specialized beverages like wheat beers.
  - Left over chlorine from bleach sanitization will also cause this in spades!
- solvent (reminiscent of acetone or lacquer thinner)
  - Almost always from fermenting at too high a temperature – stressed out yeast make fusel alcohols as well as ethanol.
- sulfur (reminiscent of rotten eggs or burnt matches
  - High sulfur in your water? Many well water sources suffer this impediment
  - Yeast autolysis – rack into secondary sooner for bulk aging

A Basic Mead Recipe: about 1-gallon quantity – traditional dry mead – No Sulfite method.

- 3 lbs. clean honey
- Clean filtered water
- Yeast nutrient
- Yeast
- 1 Gallon glass jug – sanitized. X 2
- 1 Airlock - sanitized
- Rubber bung stopper that fits jug and airlock - sanitized
- Sanitized cup or glass for rehydrating yeast
- Stainless-steel pot for heating.
- Siphon tubing (3/8" clear plastic tubing from your hardware store – about 6 feet)

In a sanitized stainless-steel pot bring about ¼ gallon of water to about 100F and add honey to dissolve.

Add about ¼ teaspoon of the yeast nutrient (I use fermaid-K) and stir to dissolve. Remove from heat and pour through a funnel into the glass jug – lots of splashing is great at this point as we need oxygen in the reproductive phase for the yeast.

Top up the jug to the midpoint of the shoulders. Cap and shake, then shake some more, then continue shaking, finally shake well.

Pour ¼ cup of this Must into a sanitized cup or glass. Add ¼ cup of clean filtered water.

Sprinkle *about half* the yeast from a packet evenly over the surface and cover with a napkin or towel and allow to rehydrate for at least 15 mins.

Stir the yeast well and add the full contents to the 1-gallon jug.

Replace the cap on the fermentation jug with the bung and airlock and fill the airlock appropriately with clean filtered water or glycerin.

Place in a cool dark location and check on it in 24 hours. It should be bubbling nicely by this point.

After 14 days check to see if the bubbling is stopped and the solution is mostly clear enough to read a newspaper through looking through the widest part of the bottle.

If not clear give it another week. Then sanitize the 2nd glass jug and the siphon tubing. The tubing must be sanitized inside and out.

Carefully create a siphon and transfer the mead from the primary fermenter to the secondary leaving as much of the sediment behind as possible.

Place the bung and airlock onto the secondary jug and return to a cool dark spot for bulk aging.

I personally age for at least 3 months but often up to a full year before bottling. You can pour a small amount at 3 months and taste, then try again at 5 or six months and you will be amazed at the difference.

Sanitize all your bottles and closures, then carefully siphon the mead into as many bottles as it will fill to the proper level. Cap or cork them and enjoy responsibly.

Resources:

- https://mead-makers.org/
  - The American mead makers association also on Facebook
- https://www.bjcp.org/
  - Beer Judge Certification Program (also covers meads)
  - Look for style guidelines for mead
  - https://www.bjcp.org/stylecenter.php
- https://mazercup.org/
  - Mazer cup international mead competition
- https://www.northerbrewer.com/
  - Online brewing equipment, supplies, and ingredients for mead, wine, and beer.