

Mead Notes for Noobs

Nutrients and Water Treatments

- [Wyeast Nutrient Blend](#) - ½ tsp. (2.2 grams) per 5 gallon
- [DAP](#) – 1 tsp per gallon
- For treatment additions use instructions for wine, not beer

pH:

- [Must](#) should range from 3.7 to 4.6
- 3.7 is high enough for yeast metabolism and low enough to inhibit bacteria.
- Check pH at start of [fermentation](#) and again if fermentation slows unexpectedly (gets stuck).
- If pH falls below 3.5 adjust upward (less acidity) by adding [calcium carbonate](#).
 - ½ tsp. at a time until pH reaches 3.8 (add, stir, test, etc.)

Yeast:

- Starter:
 - 2L Flask (or suitable container)
 - 6 cups of water
 - ¼ tsp yeast energizer
 - ¼ tsp yeast nutrient
 - 1 Tbsp DME
 - Boil for 5 minutes and remove from heat.
 - Stir in ½ cup honey and cool to pitching temperature

Gravity:

- In general a Mead should finish about 100 points below OG. This assumes a Mead that starts somewhere above 1.100, which many do.

Troubleshooting:

- Fermentation never begins:
 - too high an initial gravity, re-pitch with a higher alcohol tolerant yeast
 - dilute must
- Prolonged slow fermentation:
 - too little nutrient, add additional at 1 gram per gallon and agitate vigorously
- Fermentation slows dramatically after 2 to 5 days:
 - pH too low, refer to pH notes above.
- Stuck fermentation:
 - Must might have stratified, agitate or stir vigorously.
 - Aeration and a small dose of nutrients might help.
 - re-pitch with a higher alcohol tolerant yeast

Post Fermentation:

- Acidity
 - Related to pH but not interchangeable.
 - Fermentation does not change the amount of acidity in a mead (except a malo-lactic ferment).
 - Acid level too high – mead can be dry and tart, possibly to the point of being undrinkable. Correct by sweetening the mead.
 - Ensure fermentation will not re-start by adding [potassium sorbate](#) at a rate of ½ tsp. per gallon of mead. Stir in and let sit, at least one day.
 - Add honey 1 cup at a time, stir in thoroughly and taste.
 - Acid level too low – cloying and flaccid in the mouth. Correct by adding acid to the mead.
 - For a rough ballpark idea of what an acid addition will do, drop a couple of grains of acid blend into a sample and taste, drop in a couple more as necessary and keep tasting.
 - Dissolve ½ tsp. acid blend in ¼ cup water and mix into the mead. Repeat as necessary to taste.
- Sweetening:
 - It is easier to sweeten a finished mead that is too dry than dry out a finished mead that is too sweet.
 - See “Acid level too high” section to sweeten a mead
- Drying out a mead:
 - Re-pitch a yeast with a higher alcohol tolerance. This risks an undesirable change in the targeted flavor profile and will likely dry the mead to the point that a sweetness adjustment may be necessary.
 - A popular yeast for drying out a mead is [Lalvin EC-1118](#).
- [Malo-lactic](#) fermentation:
 - A bacterial fermentation that may reduce the real and perceived acidity of a mead, by converting malic acid to lactic acid which creates a rounder less grating impression on the tongue.
 - Will not work in a must with pH below 3.0
 - Will ferment remaining sugars producing a mead that is more dry.
 - Most useful in a mead that is intended to be dry but has finished with too much acidity. Many high malic acid fruit meads fall into this category.
 - Produces CO₂ so will carbonate and produce a sparkling mead if bottled.
 - Follow manufacturers specifications precisely.

Storage and Stability

- [Honey](#) is like any other agricultural product, the fresher the better and the closer to the source the better.
- Over time honey becomes more acidic ([gluconic acid](#)), sugars convert and break down which affects the sugar balance.
- Crystallization by itself is not a problem. The potential problem is that it creates small localized areas where moisture content exceeds the “safe” level for honey.
 - The optimal temperature for initialization of crystallization is 41°F to 45°F.
 - Crystallization occurs most rapidly when storage temperatures are between 50°F and 60°F.
- The danger of increased moisture content is that area of the honey can start to ferment, creating alcohol and eventually [acetic acid](#) which will produce “off” flavors in the honey and Mead.
- The ideal temperature for long term honey storage is 0°F
- If freezing is not an option then between 61°F and 80°F is best as crystallization may be avoided.
- Storage above 80°F will cause rapid deterioration of color, flavor and enzyme content.

Fruit:

- Extracts and concentrates:
 - Should be added after secondary fermentation is complete.
 - Usually do not require sanitation
 - Re-fermentation:
 - May need to use the [potassium sorbate](#) (noted above) method to ensure the sugar in the concentrate does not re-start fermentation.
 - It may also be good enough to add the concentrate a few weeks before bottling to allow the remaining yeast to ferment the added sugar.
 - Experiment with several small (4oz.) Mead samples to determine proper concentrate rate.
 - Always reserve some straight Mead for after the final concentrate addition. If the fruit flavor is too strong it can be diluted.
- Fresh and frozen:
 - Best practice is to add after primary fermentation or when alcohol has reached 10%.
 - There are methods and techniques for primary fermentation addition but higher risk for problems.
 - Significant advantage of the secondary addition method is the Mead can be produced before fruit season (anytime during the winter for example) and be ready for fresh fruit harvest in summer.
 - Add fruit to a fermenter and rack Mead on top.
 - Mild fruit flavor can be acquired in as little as a couple of weeks, contact times up to a year are not unusual and will produce the strongest fruit flavor. This is another good reason for secondary fruit additions as the Mead should not stay on the primary yeast for extended periods.
 - The Mead usually requires one or two additional rackings after the fruit has done its job, for clarity.
 - A big grain or hop bag to contain the fruit in the fermenter can be a big help for racking.

SUGGESTED FRUIT ADDITIONS FOR 5 GALLONS OF MEAD

Fruit	Mild Fruit Character	Medium Fruit	Strong Fruit
Apples (cider)	3 gallons in primary 0.6 L cider/L must	4 gallons in primary 0.8 L cider/L must	4 gallons + 3 (16 oz.) cans apple juice concentrate in secondary 0.8 L cider/L must, plus 1.6 L concentrate
Blueberries	5-7 lbs. in secondary 120-168 g/L	7-10 lbs. in secondary 168-240 g/L	11 lbs. or more 265 g/L or more
Cherries (sweet)	4-6 lbs. in secondary 96-144 g/L	7-9 lbs. in secondary 168-216 g/L	10 lbs. or more 240 g/L or more
Cherries (tart)	3-5 lbs. in secondary 72-120 g/L	6-8 lbs. in secondary 144-192 g/L	9 lbs. or more 216 g/L or more
Citrus Fruits (less for lemons and limes than for oranges and grapefruits)	3-5 lbs. in secondary 72-120 g/L	6-8 lbs. in secondary 144-192 g/L	9 lbs. or more 216 g/L or more
Currants	2-4 lbs. in secondary 48-96 g/L	5-7 lbs. in secondary 120-168 g/L	8 lbs. or more 192 g/L or more
Melons	3-5 lbs. in secondary 72-120 g/L	6-8 lbs. in secondary 144-192 g/L	9 lbs. or more 216 g/L or more
Peaches	5-7 lbs. in secondary 120-168 g/L	8-12 lbs. in secondary 192-288 g/L	13 lbs. or more 312 g/L or more
Pears	5-7 lbs. in secondary 120-168 g/L	8-10 lbs. in secondary 192-240 g/L	11 lbs. or more 265 g/L or more
Plums (use the skins)	4-6 lbs. in secondary 96-144 g/L	7-9 lbs. in secondary 168-216 g/L	10 lbs. or more 240 g/L or more
Raspberries	2-4 lbs. in secondary 48-96 g/L	5-7 lbs. in secondary 120-168 g/L	8 lbs. or more 192 g/L or more
Strawberries	5-7 lbs. in secondary 120-168 g/L	8-12 lbs. in secondary 192-288 g/L	13 lbs. or more 312 g/L or more

The table to the left is suggested fruit additions to acquire a desired fruit character.

The table was scanned from the book [The Compleat Meadmaker](#) by Ken Schramm . This book is a great resource and a good addition to anyone's brewing library.

Conditioning, Aging and Using Oak

- A mead is considered young until a year of age, but in most cases longer aging will significantly benefit. This is similar to a high alcohol beer and red wines (bigger ones).
- Oak aging a mead brings similar (desirable) qualities for the same reasons that wines are oaked.
 - Oak used for beverages is White Oak. Construction grade is Red Oak, don't use it for oaking!
 - Oak barrels or balls and chips are acceptable methods.
 - Toast levels:
 - Heavy – less oak character and higher levels of vanillin
 - Medium – releases some wood sugars, as well as vanilla. Almond at a medium+ toast level.
 - Light – more pronounced oak character and lower levels of vanillin.
 - Oak chips and/or balls:
 - Treat by soaking in boiled water for several hours or overnight. Some Oak is available in pre-sanitized containers.
 - Taste frequently as one week to one month is typically all that is necessary.
 - For actual barrel aged a medium toast barrel is generally recommended for mead.
 - Taste frequently to determine the level of Oak flavor. Time frames may range from days (in a new barrel) to months (in an old barrel).
 - Treat barrels as one would for wine:
 - Fill with clean water for several days so barrel swells and becomes water tight.
 - Clean with an acceptable cleaner such as Barokleen to remove debris and lower tannin levels.
 - Fill with hot water and treat with 5 to 10 [Campden](#) tablets, let sit for several hours or overnight.
 - Rinse thoroughly with hot water and repeat until the water runs clear.
 - It is generally recommended to use a lower quality mead or beer in a virgin barrel, then age the good stuff.
 - Keep barrel filled with a light sulfite solution (2.5 Campden tablets per 5 gallons of water) between uses. Change solution every three months.
- Aging:
 - No-heat and no-sulfite methods of brewing may produce a drinkable product in 6 months to a year.
 - Heat and sulfite methods of brewing generally take longer to become drinkable, typically one year and as much as two years.
 - Any method of brewing will age for extended periods assuming oxidation is controlled.
 - Oxidation prevention in a bottled mead may be accomplished by adding ½ Campden tablet per gallon during bottling.
 - Age away from light and at cellar temperatures between 50° and 60°.
 - Generally speaking lighter meads should age less and be consumed sooner than the heavier meads. Similar to wines and beers.
 - Kegging a mead will allow it to age and control oxidation while being easily available for tasting.
 - Keep dispensing pressure below 8 pounds for a still mead.
 - Keep dispensing pressure at 14 pounds for a sparkling mead.
 - Carbonate a mead the same way as a beer.

Comments:

These notes started out being a sort of a checklist of things I needed to remember as I read [The Compleat Meadmaker](#) by Ken Schramm. It didn't take long for the notes to grow beyond a checklist but it was either that or stickies and highlighter all over the book. If you are new to Mead making then I recommend getting the book. Even if you aren't ready to start a batch of Mead right away the book is a great addition to anyones' brewing library.

There was some review and suggestions by Rick Stanton, [Brew Angels](#) club president.

These notes were written from the perspective of an experienced home brewer. If you are new to brewing in general (beer, wine, etc.) some experience in one of those areas might be helpful.

Rick Reineman, June 2012