

Mead Making 202  
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Fall deeper down the rabbit hole of alchemical magick with this follow up to Mead Making 101. Folks who are already familiar with basic mead making will delight in learning new tricks of the trade & age old wisdom (beginners are welcome, but please recognize that the cadence of this class is not 101). We will boldly step beyond the introductory level of brewing and enter into the deeper realms of fermentation wizardry. We will begin with an in depth discussion of yeast, exploring many varieties of commercial yeasts & their unique nuances and applications; we'll also learn about wild or open fermenting, starter "bugs" and how to create your own personal yeast strain, or family lineage. Next, we'll talk about acid blends & what they can do for your meads, and how to create your own! We will finish with some Q & A time, all the while sampling some fermented creations from my meadery and concocting a *Bochet* or *Black Mead*, a caramelized honey mead...the ambrosia of the gods!

**Some things to consider:**

-Whenever I mention water, know that I am referring to live water, well water, or water that has been dechlorinated; this means that if you only have access to city tap water, it is important to boil it or pour it into a wide mouth vessel (like a 5 gallon food grade bucket) & let stand uncovered for 24 hours. The chlorine in city water can hinder your yeasts well being, causing less active fermentation.

-When harvesting plant materials from urban areas, always check to be sure you are not harvesting from areas that are treated with pesticides, fungicides, herbicides, dog excrete, or otherwise fouled by humans. When wild harvesting, ALWAYS practice ethical harvesting; if you do not know what this means for each specific plant (because it can be very different) then do not harvest; first educate yourself about the plants by forming a relationship with them & getting to know their ways. Only then are you ready to harvest....

-A word about honey...I use Haw Creek Honey here in Asheville, but as I travel I seek the local, raw unrefined honey from each locale I spend time in; imbued with the essence of the place, local honey really is a magickal substance. Always acquire honey from organic and (where possible) wild places; obtaining honey from farms that are heavily treated with chemicals will yield a honey less pure than honey grazed on organic farms or in wild areas. Remember, bees can wander up to 5 miles seeking nectar; consider where the bees roam who make your honey...

-Please, wherever you are in your brewing saga, begin a Brewing Journal, a book dedicated to what you brew; record the moon phases, ingredients & where they're from, who was present, plus the dates of racking & bottling...you'll be glad you did when you can look back over 10 years of notes & marvel at your creations!

**I. Yeast!!!** Yeasts are everywhere; their conquest of the world is complete. *"[They] travel on dust, in the air. In cold climates [they] can winter over, if need be, in the ground, and then take to the air again in the spring, traveling on anything that flies...One variety of wild yeast colonizes the wax bloom right on the skin of the grapes. Kind of like a message from [the gods]."*  
--Dale Pendell

**A. Commercial or Domesticated Yeasts** Sometimes brewers, especially Wild Fermenter's, can be anti-commercial yeast, saying that these are lab rats created in a petri-dish; but really they're wonderful strains of yeasts that have been cultivated in wine regions of Europe, sometimes for centuries. They are predictable & reliable, and can be helpful for the novice brewer to achieve success, and for experienced brewers to refine recipes and experiment with rare or pricey ingredients, or ingredients that are apt to spoil. The following table defines some of the most popular yeasts and details their specific qualities and preferences.

## Domesticated Yeasts & Their Uses

Yeast Number	Traditional Name	Temperature Range	Alcohol Tolerance	Characteristics
71B-1122	Narbonne	59-89 F	14.00%	Semi dry white, enhances fruit, neutralizes malic acid
K1-V1116	Montpellier	59-86 F	18.00%	Vigorous & competitive for whites
RC-212	Pinot Noir	59-86 F	14.00%	Good for full-bodied reds (fruity & spicy), promotes color retention; full extraction in reds
EC-1118	Prise de Mousse (Champagne)	45-95 F	18.00%	Reds, whites, ciders, sparkling wines; very competitive, inhibits wild yeasts; mild flavor, finishes very dry, cool weather tolerant; great for starting stuck fermentation
D-47	Cotes-du Rhone	50-86 F	14.00%	Full-bodied enhanced mouth feel, good for ripe tropical fruit, citrus notes, mead, cider, chardonnay, rose' wine
Q-A23	Portuguese	59-89 F	16.00%	Fresh fruit wines, good for white-not recommended for reds, late harvest & to restart stuck fermentation
BM 4x4	Tuscany, Italy	16-28 C	16.00%	Extra polysaccharide release in early fermentation, resulting in distinct mouth feel & color retention; does well in difficult fermentation environments

\*Note: These are all strains of *saccharomyces*, which have become human's favorite brewing yeasts, but not all yeasts are of this lineage; *Brettanomyces lambicus* and *b. bruxellensis* are just 2 of some 30 strains of yeast used to produce Belgium style lambics, for example. Also, there are bottom feeding yeasts (*s. uvarum* or *carlbergensis*), used in beer making, and top feeding yeasts (*s. cerevisiae*), used in the making of ale.

B. Waking Up the Yeast...A trick of the trade with yeasts that I've discovered is that it's nice for the yeasts (but not essential) to have a warm--NOT HOT--cup of honey water, or orange or apple juice with a little molasses, sucanat or yeast nutrient ready. Sprinkle the yeast packet on top of this liquid and let stand 15 to 30 minutes to "wake up."You'll see when its ready because it will be bubbly and foamy; be sure not to let the yeast rest in this medium for too long, as the amount of yeast in a package is measured for 5 gallons, and they will quickly metabolize the sugar in a cup of liquid, then begin to starve.

**II. Wild Yeasts** *"Like plants, many yeasts have been domesticated. They have been used by brewers and bakers for a vey long time—as humans measure time. But like medicinal plants, the wild species are more potent, less liable to weaken. If you compare the power of a wolf—look into its eyes—with a dog, you can see the difference between the wild and the domesticated. The distinction is evident in the domesticated plants as well. They are not as potent, not as strong as wild plants. Nor are they as strong in resisting disease."* --Stephen Harrod Buhner

A. **Conditions for Success:** Everything, everywhere is covered in yeast, just waiting for some food (sugars) to begin feasting. Juniper berries, grapes, figs, flowers, berries, organic ginger & turmeric, dried organic fruits, leaves, sticks, bugs, & so much more are harboring yummy yeasts that want to ferment your honey water; your job, as a wild fermenter, is simply to create the right conditions for yeasts to flourish. What are these conditions?

a. **warm sweet liquid:** begin with body temperature water, with a ratio of 1 quart (or 3#'s) of honey per gallon of water, or 3 to 6 cups of sugar (or a blend there of). If your ingredients include a lot of sweet fruits you can use less sweetener, or for a lower alcohol %. Conversely, if you are using ingredients with no inherent sugars, or for a higher alcohol %, use more honey. From experience, I have found that adding more sugars each day for the first few days of fermentation (as opposed to dumping it all in at once) feeds the yeast in a steady way, as opposed to overwhelming them with a bunch of food all at once. (see starter bug method later)

b. **Oxygenated Environment:** Your herds of wild yeast need oxygen while getting established, so each day, (preferably several times per day,) stir, Stir, **STIR**. Many students contact me asking why their brew isn't bubbling; the answers are complex, but one sure necessity is oxygen. I like to think & brew in terms of biodynamic thoughts; therefor I ceremonially stir new brews many times in one direction, imagining all of the energy in the cosmos being funneled through my magic vortex into my brew; then I reverse the direction, for whatever we take, so shall we return. Whatever your ways, be sure to stir a lot!

c. **Temperature:** newly awakened yeast are sensitive to temperatures; boiling them will destroy them and freezing will slow them down or stop them completely. As noted in the domesticated yeast chart above, there is a very specific temperature range for each yeast; wild yeasts are a little more forgiving than their domesticated cousins, but they still have a preferred range that is similar.

d. **Moon Phase:** Planting by the moon has been done for as long as food has been domesticated; so why not apply these principles to brewing? Surprisingly, there is very little information available about this topic, so you're getting some cutting edge (although very old) tid-bits here! I have found that starting a mead when the moon is half full & waxing makes for the best wild ferments. The energy in plants, animals & even hair growth have all been measured to be at their peak during this moon phase, so it is no surprise that yeasts are more active, too. Do your own experiments if you are a skeptic...I've done min...& I am convinced!

e. **Spirit...**As far back as written history travels, we have mythic stories of the yeast spirits in many cultures: from the "bryggjemann" of Norway to the Papago tiswin dancers of the indigenous North Americans, there exists a rich culture of ceremony around getting the wort to bubble. I ceremonially stir, sing little songs, adorn my bottles with sacred charms, and add crystals and micro-doses of magick ingredients. Whatever your methods, use brewing as an opportunity to develop ceremony & rituals in your life.

**III. Starter Bugs...** *"In all cases where oral accounts still exist, the knowledge of fermentation was a gift of the gods, of the sacred, to humankind. Indigenous cultures and older European brewers recognized that all the stages that led to successful brewing were sacred and should be attended with mindfulness and ceremony. Of all the steps, however, it was the moment when fermentation was ready to begin that was most important."* --Sephen Harrod Buhner

A. A starter bug is a simple method of cultivating wild yeasts in a small vessel that can then be introduced to a larger batch of mead, thus making success far more likely. The method is simple:

a. Gather materials that are likely to be laden with wild yeasts; this can be as simple as slices of organic ginger or as complex as petals from a wild rose growing on the side of a seaside cliff in England and the tears of your lover (refer to lists above in II A for ideas). In a quart jar combine ½ cup raw honey with your yeast-laden materials and fill jar ½ way with body temperature water. Shake or stir vigorously, then cover with a clean cloth & rubber band, set in a warm & happy place. Stir several times a day; when bubbling is active & effervescence is obvious, the starter is ready to work its magick!

b. In a food grade bucket gather your ingredients for the mead; this could be a tea, or whole plant materials, fruits, crystals, etc; dissolve the honey at 4 or so cups to a gallon of liquid, then add the starter bug to the bucket. Now, stir Stir, STIR!!! Practice your bio-dynamic stirring techniques several times per day; remember aeration is essential at this stage!

c. The method that I prefer is to start with 1 gallon of liquid and a quart of honey & an active starter bug; after 24 to 48 hours I will add this amount of honey dissolved in body temperature water again and continue stirring religiously. 24 to 48 hours after that I will do the same, repeating until the bucket is full. By now all of the plant materials have been removed, (accept

sometimes in the case of highly flavorful or medicinal roots) and somewhere between 4 to 8 days have passed. The brew is usually very actively bubbling by now and ready to be racked into a carboy and vapor locked. This method can be adjusted to any volume batch of mead or wild wine.

**IV. Personalized Yeast Strains & Family Lineages...***"At the marriage of children, when a new household was setting up and had no yeast of its own, sometimes the couple would...begin by trying to get a good yeast to come and live at their house, allowing a wild fermentation. This new, wild yeast would then become the kveik that was specific to the new household, and throughout the life of the family it would be the special bryggjemann that came to make ale for the family."*

*--Stephen Harrod Buhner*

**A. Culturing a Place...**At times throughout my travels, I have become so enamored with a place, that I long to preserve the colors, the lighting, the smells and the essences of the experience. Once, while living in the back country of the Gila Wilderness in New Mexico, on the Spring Equinox, it rained unexpectedly in the middle of the night —once in 8 or so weeks of living in the desert—for about 45 seconds. The smell of the cool rain landing on the warm desert sand and parched plants was intoxicating. As my campmates fumbled around in the dark to cover their bedding and things, I ran to *uncover* my bucket of Gila Wilderness mead, letting the magick of that 30 second rain land in my bucket, bringing with it the essence of that desert. The resulting mead was truly amazing, & upon opening it & inhaling its unique aromas, and sipping the beguiling dry yet quenching liquid, I am transported back to that moment of authentic life.

a. Culturing a place can be a magickal way of bringing home some of the experience of travel. The way to do this is to gather many different ingredients from the environment—flowers, roots, bark, stems, leaves, rocks, bugs & whenever possible, wild water. Begin a batch of mead on location with these things if possible, or if not a full batch, a starter bug to take home. At the very least, your materials can be dried and brought home for brewing later.

**B. Culturing an Event...**A fun way to enrich your brewing adventures( as well as the world around you,) is to culture an event. I have cultured various primitive skills gatherings, birthday parties, holidays, births, deaths, weddings, funerals, going away parties, welcome parties, mead circles and more...any gathering of friends can become a ceremony when making a mead is involved! And bringing the sacred to the mundane is an important way to remind everyone that life is far more beautiful then we sometimes allow ourselves to see.

a. Culturing an event is much like culturing a place; gather the ingredients on site. If possible, let folks know of your intentions in advance and encourage them to bring something to contribute to the mead. Add these things into a batch of mead; 1 gallon is a good size to travel with, and this can be grown into a larger batch once you're back home. I like to make notes in my mead journal of what the occasion was and where it was held. Then, have everyone take turns coming to the mead, adding their ingredient, stirring it in and writing their name in your journal. Next invite all folks who didn't bring anything to come by and stir the mead throughout the event, adding their essences to the mead, and their names to the list. The most rewarding aspect of culturing an event is going to the event next time, or another event where many of those people are present, and sharing your meads from the past. This can be a powerful way of creating a sense of community & a healthy thriving active culture.

**C. Culturing People...**There are when culturing the people present is the best way to harvest wild yeast and preserve a moment. People can be profound gifts in our lives, and sometimes honoring them through this technique is amazing.

a. Harvesting people can be done in a number of ways; chicha is a beer from South America which is made by people sitting around chewing up corn and spitting it into a collective vessel; the mush is then covered with water and allowed to sit. The enzymes in the saliva converts the carbohydrates

in the corn into sugar, which then the yeast from the corn and saliva transforms into alcohol.

b. Another method of utilizing the yeasts that people possess on their bodies is to use a stick, leave or other natural non-toxic object to harvest yeast off of people and then drop the stick or object into the vat of mead. I once passed a stick around a mead circle and asked everyone to wipe it across their upper lip; this stick was then used as the starter for a batch of mead that was made with local ingredients from this gathering in Florida. Four years later, it is still a joke that comes up in our community!

**D. Family Lineages...**In all cultures, as far back as oral & written traditions go, we find customs around preserving the specific yeast of a family in various ways; in fact, many of the most famous commercial yeasts began as a successful yeast from a particular family or region. This is done in Japan by scribing fine lines on the inner walls of the clay fermentation vessels, like a secret language that only the yeast can read; in Nordic traditions, Juniper branches were placed in the bottom of vessels, then dried. When a new batch was started 1 old juniper branch was added, along with a few new ones, thus preserving a specific yeast. The Tarahumara have special *ollas*, or boiling pots, for the making of *tesguino*, a fermented corn beer; they never wash out the *ollas*, and eventually a thick crust forms on the inside, which is laden with *Saccharomyces cerevisiae*, thus insuring that the brew will ferment well. Many cultures had a ceremonial stirring device that was often wooden and used for no other purpose, then allowed to dry with the brew on it, thus capturing the yeast.

In recent years, I have begun to repeat the same recipe of a few meads, and I am beginning the tradition of carving beautiful little wooden talismans preferably of a wood that suits the mead; for instance, a birch totem for my birch sassafras root beer, or oak to add tannic acid, or cherry wood for my late summer wild cherry mead. These small fetish items are allowed to rest in the bottom of the brew vat, soaking in all of the brewer's yeast that settles to the bottom. They are then carefully dried, wrapped in a cloth and stored safely until the next time I make that brew, whereby they are then taken out and ceremonially placed in the bottom of the vat. They will then once again colonize the substrate of honey and water with their magick populations of micro-herds. In this way, I can place a few of these in a vat and pass them on to others, thus creating a family lineage and personalized yeast strain...the Loco-Percocho Yeast!

**V. Acid Blends...**Acid blends are one of those things in the brewing world that people can have a very strong opinion on, or not care about at all. I think it is important to understand acid blends and what they can do for your mead. A good mead can easily become great with the addition of a few simple ingredients rich in acids. My only real dogma around acid blends is that I don't like the things people process & try to sell you at the brew shop; I have noticed a pharmaceutical quality to the aftertaste of many synthetic or factory harvested acid blends that is highly unappealing to me, and some synthetic acids are linked with the classic "red-wine hangover." Besides, why purchase a powder when you can hang out with a plant!?! I'll give a brief profile of the major acids, then describe my technique.

**A. The Acids...**There are many acids we could discuss here, but I'm going to focus on the Fantastic Five.

**a. Citric Acid** : Primarily found in fruits, citric acid is abundant. Berries, citrus fruit and some flowers are easy sources, adding sour, bright, bold characteristics and great high notes. A flat brew can definitely be pepped up with the addition of citric acid. I keep lemons, oranges and limes around when I'm brewing, and I love to use wild berries when in season; *can lead to the formation of acetic acid if added too much too soon.*

**b. Tartaric Acid**: Often associated with wine, tartaric acid comes primarily from grapes, but also occurs in apricots, avocados, apples, tamarind and sunflower seeds. It's primary use is to stabilize brews, promote color retention, adjust acidity, add a pleasing mouth feel and complexify a flat taste profile. I like to harvest a few wild grape vines in late summer, twining them in to wreaths and drying them on my covered porch; then when I'm brewing, if I don't have fresh grapes

available, I can snip off a bit of vine and decoct into a gentle and natural source of tartaric acid.

**c. Malic Acid:** Primarily found in green apples, but also in smaller quantities in watermelon, apricots, bananas, blackberries, cherries, grapes, kiwi, lychees, mango, nectarines, oranges, peaches, pears and strawberries, malic acid brightens a mead & adds complexity by contributing to a well developed tartness and a full mouth feel.

**d. Tannic Acid:** Found in oak and other hardwoods, horseradish, black tea, and some grapes, tannins clarify brews and add astringency, mouth feel and complexity. They can also lead to good preservation and bitterness, which can balance a mead that may be too sweet and/or tart or sour. I usually throw a few fresh oak leaves into a 5 gallon batch, or Hemlock tips and bark, or if I am working on something that needs a bit of bite, fresh horseradish leaves and/or black tea are fun and effective.

**e. Lactic Acid:** Lactic acid is the magick behind the mouth feel of a good cream stout or milk beer. It is also the sour in many German beers and lambics; in the current sour beer trend, extracted lactic acid is often employed to give brewers who are not wild or lacto-fermenting a chance to taste like they are. Lactic acid will naturally occur in many wild ferments due to the various species of bacteria that can take up residence in a solution which is not dominated by a domesticated yeast; when brewers want a sour finish, but don't want to take a chance on a 300 gallon vat, they will often use a powdered lactic acid to give it the flavor. Lactic acid bacteria are Gram-positive, non-spore-forming rods (or cocci), and they are *obligate fermenters*. An obligate fermenter is a microorganism that *must* ferment a carbohydrate source. They do not grow aerobically. Lactic acid bacteria include *Lactobacilli* and *Pediococci*. I utilize different strategies to get lactic acid in ferments that I'd like to be a little sour and complex. Most readily, allowing a wild ferment to proceed through its natural stages in warm summer months with a variety of fruits introduced, especially if I backslop a bit, or prime the mead in the beginning with a little active mead from another batch. I have also added ripe Kraut juice (full of *Lactobacilli* bacteria) to a mead that had already gone through the yeast fermentation, where at least a few species of *Saccharomyces* had already done their handy work, and then let this continue to ferment for some time, then added a high gravity commercial yeast (EC-1118) on top of that for a dry finish. This resulted in a delightful tangy, sour rich & complex brew. The following is a simplified account of the process to make a lambic, just to give you an idea of how deep this rabbit hole goes:

1. *Lambics:* Lambic fermentation involves a complex sequence in which yeast strains and bacteria pass into and out of active phases. After cooling the wort, yeast and bacteria are allowed to “fall” into the open fermentors. Certain bacteria and the yeast *Kloekera*, the most competitive, thrive for 2–3 weeks. Species of *Saccharomyces* then perform the main alcohol fermentation for 3–4 months. After that, lactic acid bacteria, dominated by *Pediococcus damnosus*, provide lactic acid fermentation for 4–5 months. This is followed by the lambic yeasts of the genus *Brettanomyces*. *Pediococcus* bacteria and *Brettanomyces* yeasts ferment the complex sugars left behind by the other species. Several other bacteria and yeasts play minor roles. The process is a dynamic ebb and flow of activity from all of these various agents, each one present from the beginning of fermentation but becoming active only when conditions become favorable thanks to changes in pH and other factors resulting from another agent's activity. The result is the wonderfully complex blend of flavors of lambic beer. For a detailed look at lambics, consult Jean-Xavier Guinard's book, *Lambic Beer* (2)

**B. Technique...** I like to let my meads go through the chaos of primary fermentation before I adjust acids; however, I do take preemptive measures to ensure that the beginning acid profile is balanced in each of my meads. To do this, I add ingredients from each of the acids mentioned above to the brew recipe, being sure to be moderate in each so that the flavors of the primary ingredients can be enhanced, but not lost (reserving lactic acid for when I want the creamy mouth feel & slight sourness of lacto-ferments). This means that if my brew contains a lot of citric acid in the form of fruit, I'll add some apple juice or apples for malic, grapes, leaves or vine tea for tartaric, and some tea or oak leaves for tannic. However, if I am brewing a rooty medicinal mead, I'll add some citrus to brighten it up, malic to smooth it out, and some grapevine to round out the flavor. Then, towards the 6 month mark, I will sample the mead and evaluate

its flavor profile, adjusting accordingly.

**VI. Bochet or Making Black Mead from Caramelized Honey...** We will be using the "bochet" recipe from Le Menagier de Paris (1393), (English translation) from: "Mead before Digby" (2003). This is a very old, very rich toffee like creation, that is complex to make, slightly dangerous, and absolutely amazing!

**A. The original recipe (translated from old french):** to make six sesters of bochet, take six pints of good sweet honey and put it in a cauldron on the fire. And let it boil and stir as long as it continues to rise up, and you see that it throws off bubbles like little globules which burst and when they burst they emit a little bit of smoke that is rather blackish. And then move it, and add seven sesters of water and let it boil so much that it goes back to being six sesters, and always stir it. And then put it in a tub to let it cool until it is just lukewarm; and then pour it through a cloth-seive, and then put it in a little barrel and add a cup of beer yeast because that is what makes it piquant (and if you use bread yeast, it is just as good for the flavour, but the colour will be more dull) and cover it well and warmly so it can work.

**B. Modern Translation:**

1. Cool 2 spoons in ice water; start your yeast; I like an ale yeast like RC-212.
2. Put honey directly into heavy pot with no other ingredients. Boil until it turns to hard toffee, stirring regularly (about 1hr 30min, but check it periodically with chilled spoons)
3. When the toffee is ready, prep your water (make sure it's \*hot\*), put your safety equipment on (long sleeved shirt, goggles if you are really worried,) and rapidly mix the water into the toffee. It \*will\* splash up high, so be careful! Another method is to add a tiny bit of hot water at a time until you can safely pour in the rest, using the pot lid as a shield.
4. When thoroughly mixed, allow to cool to body temperature, pour through a filter, add yeast and pour into carboy; airlock.

**C. Some notes on Bochet...** The first time I made this divine beverage, I lost half of it on the stove because I was unaware of how much the honey would grow when the water was added; one quart of honey can easily overflow in a 6 quart pot. I also burned myself pretty seriously, as things in the "hot candy stage" are hot, indeed! If the water is cold, or poured in too quickly, the mixture can splatter on arms, face, eyes, walls, kids, dogs, etc...**BE CAREFUL!!!** Always heat your water first, and experiment with pouring & stirring in tiny amounts of water at a time until the mixture is cooled enough to not splatter everywhere. Also, I have experimented with filtering and not filtering this brew; the filtered version definitely finishes a little clearer, so if that is important to you, its worth the extra step.

**VII. Wrapping the Bundle...** Now you are fully prepared & hopefully inspired with new ideas to go back out into the world with a new filter, seeing things in terms of wild yeasts to harvest, available forage for mead making, events to bottle, and much merriment to be had! May your journey with brewing grow ever deeper as you seek to be more self reliant, stepping off of the wheel of consumption and capitalism, to inhabit a more authentic life.

*"Never doubt that a small group of thoughtful, committed citizens can change the world;  
indeed, it's the only thing that ever has."  
-- Margaret Mead*

*"Revolution is brewing and is bound to flare up."  
--Lenin*