

New Sake Recipe

PART ONE -- PRELIMINARY INFORMATION

MAKING really good SAKE AT HOME

Using the more efficient Sokujo-moto method, with well polished sake brewery rice and fresh brewery koji. by Fred Eckhardt, (c) 1976, 1982, 1991, 1993, 1996, 1997, 2000 all rights reserved. May not be reproduced for sale.

Sake is unique among fermented beverages, in that the sugar is being produced from starch - by enzymes - simultaneously with the fermentation process - by yeast. The alcohol content can be very high: 16-20% by volume, depending on the rate of polish on the rice (the more polish the lower the alcohol content). Because of the cool temperature requirements of the ferment, it is best to make sake in the late fall to early spring, or use refrigeration. This recipe makes what the Japanese call Nihonshu, Japanese shu (rice beer). It is also called Seishu refined shu or rice beer. We have come to call it "sake" which is another pronunciation of "shu". They share the same Chinese character.

"Refined." Now that ought to tell the reader something. IT'S NOT SIMPLE. You want simple; make wine. Get used to it. All grain beer brewing is not simple either, but if you want to do that you do what it takes. Sake brewing is no more difficult, in fact it is easier. All grain brewing takes all day. Sake brewing takes longer, but the steps are much easier. THE HARD PART IS DOING THINGS IN THE RIGHT ORDER. You will have better success brewing sake if you take the trouble to make up a "Sake Brewing Time Table" and keep a log as described on pp141-6 in Sake (USA).

We are happy to acknowledge the help and assistance of the brewers and management of SakeOne Brewing, Forest Grove Oregon, especially CEO Grif Frost and brewmaster Abednego Barnes.

EQUIPMENT

You need normal winemaking equipment: two food-grade plastic open-topped primary fermenters (2.5-gallon and 5-gallon sizes), a plastic sheet to cover same; several (6) closed secondary storage vessels such as 1-gallon or 4-liter bottles; about 7ft (2.1m) of 3/8-inch (9.5mm) plastic siphon hose, and several fermentation locks. You will also need a fairly large double or triple deck steaming vessel of at least 2-gallon capacity (45cm/18inch, found in Asian grocery stores); a small plastic or wood winepress would also be useful. A specific gravity hydrometer and hydrometer jar are also desirable. Most of this equipment is found at any beer or winemaking supply store (yellow pages under Home Beer-making Supplies or Home Winemaking Supplies).

CLEANLINESS AND STERILIZATION OF EQUIPMENT

All of the equipment used in the fermentation, pressing, or bottling of the finished, or fermenting, product must be absolutely sterile. A sterile solution can be made using about 6ml (1-1/4tspn) Iodofor BTF in a gallon/4liter of water. This is iodine, odorless and tasteless at this concentration. It takes about 2- 5-minutes to work, does not have to be rinsed, and will not damage stainless steel equipment as will chlorine bleach. The solution is brown at first and can be reused. When it goes to yellow change the solution. You can also use 2-tablespoon of household

chlorine bleach in a gallon of water. Rinse the equipment carefully in this solution, and allow to drain completely before using. Water rinse is usually not necessary, as this low concentration will likely dissipate soon and not leave any flavor in the finished sake, but there is no guarantee, the Iodoform is better.

All measurements are given volumetrically, and the 8-oz cup is easiest to use, since the relationships are volumes of ingredients rather than weights. This recipe is designed to brew using the special brewers' polished California Akito Machi short grain rice (from the SakeOne brewery in Forest Grove, Oregon), which has been polished to a total of 58% to 63% of its original weight, and the special koji from that same brewery. When using any other rice (Homai, Kokuho Rose, etc.), follow the directions in my book "Sake (USA)" or those in the earlier recipes in this series, which is found on the internet at www.spagnols.com. Your water should be soft, and with no iron in it at all, if your water is not soft, use distilled or deionized water. You will need to add the Morton Salt Substitute in the yeast mash, which is the only generally available chemical addition with the right concentration of proper nutrients and water adjustment for sake brewing to match the famous Japanese miyamizu (heavenly water): potassium chloride, fumaric acid, tri- and mono-calcium phosphate.

The yeast needs other nutrients; epsom salts and regular winemaker's yeast nutrient will suffice. The alcohol content may be controlled by varying the addition of water late in the procedure (Stabilization Stage). Our recipe will produce about 2-USgallons (7.6-liters) of 18.5% alcohol (by volume -- genshu strength) sake. Adding more water will produce additional sake, but with lower alcohol content. Use of even more highly polished rice (to 50% or more), will also reduce possible alcohol content. Extra water (to reduce alcohol to the normal commercial level 15-16%abv) should be added at the Stabilization stage, e.g. about 28-oz (830ml) will make sake with normal commercial ABV of 16%. Be very careful; such water, once added, cannot be removed. Pay attention to our warnings throughout this recipe.

INGREDIENTS

better SAKE RECIPE

(single recipe--may be halved, doubled or tripled)

U.S.	item	metric-
10-lbs	Brewers polished rice (to 58-70%)	4.54kg
2.5-lbs(40-oz)	Brewers koji	1.13kg
2-USgal	water	7.6 l

PLUS acid adjustment using lactic acid if possible:

1-tspn	Lactic acid 88%	3.8ml
or, alternately, if no lactic acid is available		
8/10-tspn	Winemaker's Citric acid, or Acid blend	4.1gm

AND the following:

3/5-tspn	winemaker's yeast nutrient	4gm
A pinch of epsom salts (magnesium sulfate--MgSO4)		0.7gm

ALSO

yeast	WyEast sake yeast	packet
finings	Bentonite or Sparkolloid	packet
1.25-tspn	Morton Salt Substitute (only)	7gm

SAKE--STAGES OF FERMENT

The ingredients are assembled in the fermenter in five increments:

1. Shubo or yeast mash.
2. Moromi or main ferment, consisting of
 - a. Hatsuzoe, first addition
 - b. Nakazoe, middle addition
 - c. Tomezoe, final addition.
 - d. Stabilizing addition.

The various stages of fermentation require different temperatures, these can be as low as 40F/4.4C which would probably require refrigeration, and warmer (50-60F/10-16C) which might call for a cellar, or at least a cooler time of the year, such as fall-winter-spring. Some ferments are done as warm as 73F/23C which might require a warmer room. I solve these problems by fermenting in the winter and moving the ferment about my house and garage to achieve the necessary temperatures for the various stages. Good temperature control is essential to making good sake.

PREPARATION OF THE RICE

For each addition prepare the rice as follows:

1. Wash the rice completely and thoroughly in running cold water to remove all starch powder.
2. Cover the rice with 2- 3-inches (50- 75mm) of very cold water, steep for about an hour, and drain for another hour before using. The object here is to add moisture to about 25-30% by weight. I don't recommend it, but you COULD steep for 6- 11-hours and drain for 1-hour (which is not as good) but may be more convenient for you, and with only a modest effect on the quality of the finished product.
3. Place the rice in the double deck steamer - which must have plenty of water in the bottom to allow for the long 1-hour steam. The rice is not boiled, but steamed - separated above the boiling water - for an hour.
4. The koji for each addition (except that for the very first step - the shubo or yeast mash) is always added to the mash about 12 hours before adding the freshly steamed rice for that addition. At that time also add the koji portion, and half of the water for the next addition as well. Freeze overnight the other half of that water, which will help cool the freshly steamed rice, when that is ready (the next day after 12-hours).
- 5.

CHART OF ADDITION OF MATERIALS						
		Yeast Mash	First Addition	Middle Addition	Final Addition	Totals
Steamed rice	ounces	12	20	48	80	160 (10-lb)
	8-oz cups	1-1/2	2-1/2	6	10	20
	grams	340	567	1,361	2,268	4,536
Koji	ounces	4	8	12	16	40 (2.5-lb)
	8-oz cups	1/2	1	1-1/2	2	5
	grams	113	227	340	454	1,134
Water	ounces	20	22	70	144	256 (2 Usg)
	8-oz cups	2-1/2	2-3/4	8-3/4	18	32
	cc/ml	620	690	2,070	4,259	8,520

PART TWO -- MOTO -- YEAST MASH -- SHUBO

SHUBO OR YEAST MASH

(total time 5- 7-days)

Our original recipe Sake (USA) used very traditional methods to start the shubo (yeast mash). This was a modification of the original ancient and traditional method for preparing the yeast mash called yamahai moto, it is still used by some Japanese sake brewers to this day. That method was tedious and convoluted, but entirely natural, except that one added yeast to the mash. This complicated procedure made sake brewing seem far more difficult than it was. The real difficulty lies in organizing the steps of the process, so as to do each in its proper turn.

Our current recipe incorporates a more modern procedure, which has the advantage of being simpler to carry off, while also reducing the acidity of the finished sake. The long Yamahai mash relied on natural lactobacillus for acidification. You add acid in this procedure, which is called sokujo-moto. The net result is lower total acid in the end product and simpler production steps. The sokujo method was invented in 1909, but has been improved and updated often since then. It is currently the most popular yeast mash production method in use by Japanese sake brewers. Lactic acid is called for, but homebrew and winemaking supply stores don't always stock lactic acid. If that is the case, you could also use the equivalent, and more available but not as good, dry citric acid.

SHUBO - THREE DAYS EARLY

Important Please note that you must add very active yeast to this yeast mash (#3.a. below) and that means you must start the incubation of your Wyeast early enough, (at least 2- 3-days before the start), so the packet is enlarged and fully active to be ready when added.

SHUBO - THE NIGHT BEFORE DAY ONE

1.

- a. Use 2.5 cups (20-oz/600ml) good brewing water that has been dechlorinated by standing for a couple of days. The water should be very low in hardness (less than 100ppm), and with no iron content at all (less than 0.05ppm). If your water department uses sodium or calcium chloride as the active agent to chlorinate your water supply, do not use that water; instead, buy distilled, or deionized water. You can verify all this by calling your water department. Don't use hard water either (over 100ppm), at least not for the shubo mash.
- b. To this water, add the water adjustment chemicals: the lactic acid 88% solution (1-teaspoon/3.8ml) or winemaker's citric acid (4/5-teaspoon/4gm) [to prevent harmful wild yeast growth]; the winemaker's yeast nutrient (3/5-teaspoon/4gm); epsom salts (pinch/0.7gm); and Morton's Salt Substitute only, (no other brand please), (1-1/4 teaspoon/7gm); stir to thoroughly dissolve all of those chemicals - they provide nutrients for yeast growth.
- c. Separate 1/2 cup (4-oz/120ml) of the above water, and put that in the freezer. Cover the remaining water, 2 cups (16-oz/480ml) and store in a cool place (about 59-64F/15-18C) overnight.

SHUBO - DAY ONE MORNING

2. Start by washing and steeping 1.5 cups (12-oz/340gm) rice: Steep for 1-hour and drain for 1-hour at room temperature. Ordinary water will do for this.

3.
 - a. Add the fully active and enlarged yeast packet contents to the 2-cups of water you left standing all night (at 59-64F/15-18C). Leave this stand for an hour, while you:
 - b. Add 1/2 cup koji (4oz/115gm) to the water yeast mixture (above #3.a.), and stand for another hour. Check the temperature of the mix, which should still be around 59-64F/15-18C. If you checked the pH, (which isn't necessary); you'd probably find it at 3.6-3.8 or so.
 - c. Steam the rice 1-hour, and then cool it with the four ounces of ice (#1.c.) you stored all night in the freezer. Add this mix to the water-koji. The resulting temperature should be somewhere around 70F/21C. If it is too warm, (above 90F/32C), the heat may damage the live yeast. Do what you can to get the temperature to 70F/21C as soon as possible (i.e. float a bag of ice cubes in the mash, or heat by floating a small plastic bag of hot water in the mash).
 - d. Mix gently, but well, by folding the rice - water - koji - yeast mix for about 5-minutes. Gently and smoothly, please. (A sterilized stainless steel stirring spoon is OK for this).

SHUBO - DAY ONE EVENING

4. Stir gently again for about five minutes, 12-hours later.

SHUBO - DAY TWO

5. Stir gently twice (morning and evening, at about 12-hour intervals). During this period gradually raise the temperature from 70F/21C to 73F/23C, and maintain that temperature as best you can.

SHUBO - DAY THREE AND FOUR

6. Continue to maintain the above temperature, and stir twice daily. You can actually continue this for up to three more days (days five, six, and seven) if you need to, i.e., if you started Saturday morning, and want to start the main mash the following Saturday.

PART THREE -- MAIN FERMENT BUILDUP

MAIN FERMENT BUILDUP

(time four days)

The Buildup ferment will be in three stages over a four day period. The stages, or additions, are called First Addition (hatsuzoe), Second Addition (nakazoe), and Final Addition (tomezoe). Each consists of a further portion of koji, steamed rice, and water. These sequential additions each double the volume of the mash until the main ferment can take place over about three-weeks. Specific procedures follow. Beginning here the water can be ordinary tap water (no iron, under 250ppm hardness), although the distilled or deionized water would be slightly better. If your water is too hard with no iron, you can cut it with distilled as necessary.

The buildup in three additions: First addition - hatsuzoe, and the odori or dancing ferment.

BUILDUP - THE NIGHT BEFORE DAY ONE

1. The night before starting the main ferment, add koji (1-cup/8-oz/225gm) to the yeast mash (which has been working for 5- 7-days). Fold the koji gently into the yeast mash (shubo), and add half of the 2-3/4 cup (22-oz/650ml) water required for the next step, or about 1-1/2 cup (12-oz/355ml), stir gently. Lower the

mash temperature to 59F/15C, place the remainder of that water (10oz/295ml) in the freezer to freeze.

BUILDUP -- DAY ONE

2. The next morning, wash and steep 2-1/2 cups rice (20-oz/570gm) for one hour, and drain for one hour. If you are pressed for time; (I don't recommend this), but you could steep for 8- 11-hours and drain for 1-hour (not as good but may be more convenient), and with only a modest effect on the quality of the finished product.
3. While the rice is soaking and draining; cool the mash to 50F/10C. After the rice has soaked and drained; steam it as described earlier.
4. When the rice has finished steaming, place it in your small, clean, sterilized, 2.5-gallon plastic open fermenter. Cool it by adding the water you have frozen, and/or place the container in a cold water bath. Be sure the mass has cooled below 90F/32C, before proceeding.
5. Now add the shubo, or yeast mash (which has been fermenting for 5-7-days) to the fermenter, and mix with mild agitation, gently but thoroughly, for about 5-minutes. Cover the fermenter with a plastic sheet and cool to 55F/13C. Do what you can to get the temperature to 55F/13C as soon as possible (i.e. float a bag of ice cubes in the mash, place it in a cold water bath, or - if necessary - heat by floating a small plastic bag of hot water in the mash). Stir gently at 12-hour intervals.

BUILDUP -- DAY ONE EVENING AND DAY TWO -- ODORI FERMENT

6. Stir, or gently agitate, at about 12-hour intervals for a total of 48-hours time (from steaming). The second 24-hour period is called odori, or dancing, ferment. By now you have tripled the volume of the original shubo, and the ferment will be quite active.
7. The night before day three, add koji 1-1/2-cups (12-oz/340gm) to the main mash. Fold the koji gently into the mash, and add over half of the 70-oz/2.1liter water required for the next step, or about 40-oz/1.2liter, stir gently. Lower the mash temperature to 59-68F/15-20C (the lower temperature is much better), place the remainder of that water (30oz/870ml) in the freezer to freeze.

BUILDUP -- DAY THREE

Middle Addition (Nakazoe).

1. This takes place 48-hours after the first addition. Wash and steep 6-cups of rice (48-oz/1.36kg) for one hour, and drain for one hour.
2. Steam the rice for one hour as described earlier.
3. Add the iced 30oz/870ml from the freezer, and mix into the steamed rice, which will help cool it to at least 90F/32C. gently mix this into the fermenting mash, with mild agitation, for a few minutes. Lower the temperature to 48-60F/9-20C as quickly as you can. Stir gently again after 12-hours, and keep the mash covered. By now you will have doubled the volume to about 2- gallons. Keep the temperature 48-60F/9-20C. Lower temperatures are always better.
4. That night, add what's left of the koji (about 2-cups/16-oz/454gm) to the main mash. Fold the koji gently into the mash, and add over half of the 144-oz/4.3liter water required for the

next step, or about 8cups/72-oz/2.1liter, stir gently. Maintain the mash temperature at 50-68F/9-20C (lower temperature is much better), place the remainder of that water (30oz/870ml) in the freezer overnight. (see adjustment stage box*)

BUILDUP -- DAY FOUR

Final Addition (Tomezoe). 24-hours after last (middle) addition.

1. The next morning, wash and steep the remaining rice (5-lbs) for 1-hour, and let it drain for 1-hour. (see adjustment stage box*)
2. At the proper time, steam the rice for one hour; and while this is going forth clean and sterilize the large 5-gallon fermenter.
3. In the large fermenter mix the steamed rice with ice you froze last night. Be sure the mass is no warmer than 90F/32C and add the fermenting mash from the small fermenter. This will again double the mash volume to about 4-gallons/15liters. Be sure to stir at 12-hour intervals through two more days. Cool to and keep the temperature at 45-65F/10-18C, and remember cooler is better. (see adjustment stage box*)

PART FOUR -- MAIN FERMENT, SECONDARY FERMENT AND FINISHING PROCEDURES

MOROMI or MAIN FERMENT PROPER

Moromi -- FIRST DAY. Lower the temperature to below 60F/15.5C, if you have not already managed that. It could be cooler, as low as 45F/7C. Keep the fermenter covered and cool, this should be a long slow ferment.

1. Stir gently and twice daily for the first two days. Keep covered and at 45-60F/7-15.5C as described above.
2. (Optional) take samples on the 2nd and 7th days to determine specific gravity with your hydrometer. Specific gravity will drop from 1.045 to 1.020, and continue falling. See earlier note on stopping the ferment to prevent the sake from going too dry.
3. By the 11th - 15th day or so, the ferment should be nearly over. Maintain the low temperature. Gravity should be 1.000 or lower. The alcohol will be about 13-15% abv (by volume) at that time. You can lower the temperature as low as 45F/7C if you have not already done that. You are ready to make adjustments to stabilize and finish the main ferment.

ADJUSTMENT STAGE - YODAN

ADJUSTMENT Stage (Yodan). Fourth Addition - stabilizing and adjusting the alcohol content. (see adjustment stage box*)

The Water Addition consists of adding 26- to 148-oz/770ml-4.4l of chilled water, the amount of which will depend on the final desired alcohol content. Be very careful because WATER ADDED CANNOT BE REMOVED; and also remember to save part of the water additions for topping up your fermenters in secondary aging. Ration your water carefully.

If you add no water, the beer will be full strength (genshu) sake. This full strength varies somewhat according to the rice polishing ratio. Dinner rice (polished to 93%) rice may give you 20% abv in your sake, while the rice we recommend here (polished to 58%) will give you 18.5-19% abv. If you desire a commercial strength ordinary sake (16.5% abv), then you should add 26- 30-oz/770 -890ml, depending on the polishing rate of your rice.

If you wish to make sparkling sake, a bottle ferment is required, and that means not more than 11% abv, or there will be no second ferment in the bottle. Adding 140 -148-oz/4.1- 4.4liters will allow the second ferment necessary for sparkling sake.

These adjustments are all done at the Yodan (19th day) addition of water and/or rice to control alcohol strength desired, as noted earlier. In

this recipe the sweet-dry balance is controlled by stopping the ferment at the desired end-point, i.e. between 0.996 (SMV +5.8) and 1.003 (SMV -4.3). Rack and pasteurize. Alternately at yodan you can add some of the last rice and water addition as mentioned earlier.

MOROMI MAIN FERMENT - END

In another 3- 7-days, the moromi or main ferment will be finished. Gravity will be around 1.005-15 or lower if the ferment has been warmer.

*ADJUSTMENT STAGE

BUFFERING THE FINISH

*It is wise to incorporate an adjustment stage to buffer and prevent the ferment from going too dry (i.e., below s.g. 0.993/SMV +10). If you do that, you will need to save (from the last tomezoe addition) about 10% of the rice for that addition (1-cup/8-oz/225gm - but not any of the koji - and some of the last water addition - 2-cups/16-oz/470ml. Alternately you can keep the ferment from going too dry by racking (transferring) from the main ferment when the specific gravity reaches the desired level. We recommend not lower than 0.993 to 0.998 (+10 to +3 SMV). Dry sake is nice, but it can get on your nerves.

ADJUSTING THE ALCOHOL CONTENT

NOTE: The polishing ratio of the rice used in sake brewing has a definite effect on the final alcohol content. The greater the rate of polish, the lower will be the final possible alcohol content of the sake. Sake brewers have told me this, but I can find no specific English references to the ratios involved; so the following is only speculation.

Highly polished rice (e.g. to less than 50%) as in dai-ginjo production will result in about 16.5% alcohol maximum. Reducing the water used in sake production results in injuring the rice and its ferment, rather than increasing the alcohol content. Ration your water additions accordingly. Any water added will lower the alcohol content. Be careful.

SECONDARY FERMENT AND MATURATION

Somewhere around the 14th day - after about two weeks in the main ferment - the specific gravity of the mash should be down close to 1.000 or maybe even lower. See (adjustment stage box*) with note concerning rice and water adjustment. This last adjustment addition also tends to stabilize the alcohol content of the sake. IT IS TIME TO RACK TO SECONDARY FERMENTERS.

1. Transfer the sake from the open primary fermenter by siphoning the liquid through a plastic siphon hose from the primary to sterilized closed fermenters such as four-liter or one-gallon wine jugs. There will be about 290-ounces/8.5-liters (more if you added water at the stabilizing addition) of liquid, that is about 2.25-gallons. Fill the jugs to about the level of the shoulder (not full), this will take about three such containers.

Press the lees carefully to extract all possible fluid. A small winepress (found in winemaking supply stores) is good for this. Put the sake lees in a cloth strainer bag, such as 1/16" nylon mesh bags, also available in winemaker supply stores. The liquor from the pressing should fill the three jugs 3/4-4/5 full. This process of transferring the sake to closed containers is called racking. Now is time to take NIGORI for the table, or for bottling if that is your desire. If you bottle the nigori be sure to pasteurize and cap it.

2. These containers and their sake should be placed under fermentation lock. Fermentation locks are small inexpensive plastic fittings which hold water, and permit the escape of carbon dioxide without allowing the entry of oxygen, which can damage the sake. Keep them under observation

until you are certain there is no more ferment. Keep them covered and shielded from light at all times. Light and oxygen are the enemies of sake.

3. The end of ferment is signaled when there are no more bubbles in the fermentation locks. The storage temperature of the secondary fermenters should be around 45F/7C.

4. The fermentation locks should be removed from the bottles, and you should "top" them up, by adding water, or commercial sake, to fill the jugs to the neck, so as to reduce air space. They should be capped, and then placed in the refrigerator at 38F/3C for about ten days.

5. After ten-days, the sake should be racked again (to two or three more sterilized wine jugs) and strained through about 4 layers of gauze to remove any remaining solids; then fine with Sparkolloid or Bentonite. Follow the manufacturers directions for using these agents. To fine is to clarify the brew. Allow another 10-21 days for the final clarification of the sake. By then there will be a very thin light sediment in the bottom of each jug.

6. When the beer is clear, and well settled, rack again and be very careful not to siphon any of the light sediment from the bottom of the old jugs to new, clean (and sterilized) jugs. Measure the specific gravity once more, it should be 0.990-0.999 (SMV +1 - +15. The alcohol will be 17-18% by volume (dependent upon how much water added when you topped up the jugs at racking). This will be dry sake. The sweet-dry balance is controlled in the main ferment by racking when the preferred gravity level is reached (i.e. 1.001 -1.002/SMV -1 to -2) for mild sake, and then pasteurizing to prevent further ferment.

7. Pasteurization is necessary to inactivate the koji enzymes and disinfect the beverage. PASTEURIZATION IS REALLY VERY IMPORTANT IN MAKING AND STABILIZING SAKE. Place the storage jug in a hot water bath, with a thermometer sticking in the neck. Heat the water until the thermometer shows 140F/60C, and remove the jug, cap it and allow to cool. This was done traditionally at the 88th day from the start of shubo.

8. If you don't want to pasteurize your sake, don't. BUT that sake is called nama or draft sake. It must ALWAYS BE KEPT REFRIGERATED.

9. Otherwise store your finished sake for 3-weeks to 6-months at 50-60F/10-16C.

BOTTLING AND FINISHING

1. You can use champagne bottles (1.5-liter, 750ml, or 375ml) if you are a beermaker, because they can be crown capped. You can also use regular beer bottles. If you are a winemaker, you can use cork-finish wine bottles, or screw-cap bottles from your winemaking supply store. Sake is best in brown bottles, and kept away from the light. Light and air can quickly ruin sake.
2. The sake should be pasteurized once again before closures are added, since THE FINISHED PRODUCT IS SUSCEPTIBLE TO CERTAIN LACTIC ACID AND BACTERIAL INFECTIONS. Pasteurization should not effect the flavor negatively.
3. Sake is ready to drink at any time after it is bottled, but a modest aging period of up to six months helps. Sake brewers disagree as to whether further aging is beneficial.
4. Finished sake is best served chilled to about 45 -50F/7 -10C, however in cold weather it is also delicious served warm at 109 - 119F/43 -48C.

Remember: Sake brewing is easier if you make a day by day plan ahead of time before starting.

SAKE WARM-LINE TELEPHONE: (503)289-7596.

Warm-Line not Hot-line, I am on Pacific time, so please not before my 9:30 am. It is better to call me mornings (Pacific time), because I am more competent at that time. If you don't get me, leave a message regarding the nature of your problem, and your number, which I can call "collect". Remember I am not very prompt. Please try to keep your contacts to week days, although I do function on weekends, I just prefer not to do this on weekends. There is no charge for this service. I want to help you brew good quality sake in your home.

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