Recipe :

Freedom of Speach (Kettle Sour)

(5 gallons (Finished Beer) / 19 L - All Grain

Specs :

O.G. = 10 P or 1.040
T.G. = 1.45 P or 1.0056
ABV% = 4.5 %
IBUs = 7
Color = 4 SRM

Ingredients :

Malt :

5.5 lbs. (2.5 kg.) 2-row Malt (2 Lov)
1 lb. (.45 kg.) Rahr Red Wheat Malt (3.3 Lov)
9.5 oz. (269 g) Weyermann Acidulated Malt (3.2 Lov)

Water Treatment (For Mashing) :

Lake Michigan Water. For Reference (See Chicago Water Profile)
Carbon Filtration
Food Grade Gypsum (.12 oz. / 3.4 g)
Calcium Chloride (.12 oz. / 3.4 g)

Hops :

Herkules Hop Pellets (80 min.)[At Boil Start](.1 oz. / 2.8 g at 15.1 % Alpha Acid)
Crystal Hop Pellets (10 min)(.6 oz. / 17 g) at 5 % Alpha

Dry Hop :

We will not be Dry Hopping this beer!!

Concentrate :

60 Brix Peach Concentrate : 20.5 fluid oz. / 30 ml.

Tip : Using fruit concentrates for our Freedom Kettle Sours is easier and more efficient than Aseptic fruit purees which tend to carry high levels of solids. If you use purees you will require extra steps to strain or settle fruit solids out so expect some loss.

Yeast :

Wyeast 1968 - London ESB ALE

Lacto :

Omega Yeast Labs (OYL-605 : Blend of Brevis and Plantarum) 1 - 5.07 fluid oz. / 150 ml pack.

Tip : Prepare a 1 L starter with unhopped 10 P (1.040) wort. Cool to 85 F and allow this prop to incubate 24 hrs prior to pitching it in your Brewkettle. This will increase your lacto population and get it ready to get to business souring your wort.

Yeast Nutrient : Gusmer Yeast Tabs or Powdered Yeast Nutrient : 1.5 oz. / 43 g

Note : Yeast nutrient is key for giving the 1968 ale yeast everything it needs to perform at its best in a lower pH environment and conduct a strong, complete fermentation!

Finings :

Gusmer Kick (Carrageenan) or Whirlfloc G [Kettle Finings] : .09 oz. / 2.6 g
Nalco or Boifine Clear (Silica based fining agent in liquid form) : 1 fluid oz. (30 ml.)

Anti Foam :

Fermcap S

Used in the Brew Kettle to avoid Boil Overs! (.21 fluid oz. / 6.2 ml.)
Used in the fermentation vessel to prevent foaming / loss (.17 fluid oz. / 5 ml.)

Note : Reducing foaming all throughout the process in the brewhouse to package will help the foam stability of your finished product!

Mashing :

Pre-Heat Mash / Lauter Tun prior to mashing in.
We will perform a Single Infusion mash at a ratio of (3:1) so for every 3 lbs (1.4 kg) of malt we need 1 gallon (3.785 L) of Hot Water (Liquor).
Add 2.33 gall (8.8 L) of Hot Liquor at 160 F (71 C) to the Mash / Lauter Tun and stir in the Gypsum and Calcium Chloride.
Immediately mash in grains targeting a temperature of 150 F (65.5 C).
Rest at 150 F (65.5 C) for 50 min.

Lautering Procedure :

Vorlauf or recirculate wort for 10 min to clarify wort before going to brew kettle.
Take a sample to confirm starch conversion is complete.
Collect first runnings in the Brewkettle (Take a 1st Wort Gravity and pH).
When the grain bed is beginning to become exposed start sparging 170 F (77 C) with Hot Liquor.
Begin heating wort in the kettle to avoid a long delay coming up to boiling temp.
While sparging try to maintain a constant ¼ inch of clear hot water above your grain bed.
Fill your kettle to 7 gallons (26.5 L) of wort cutting your sparge at about 6 gallons (in Kettle) (23 L) to allow sparge water to pull through the grain bed.
Collect a Last Wort Gravity and pH.

Kettle Program :

Note : Realistically for most of us brewing at home the Brew Kettle acts as a combination Kettle and Whirlpool.
For this particular brew the Brewkettle is also going to triple as a Wort Souring Vessel!

At Kettle Full Volume :

Bring wort up to Boil temp. Add 1 fluid oz. / 30 ml of food grade phosphoric acid to the BrewKettle. Target presouring ph of (4.8 - 5).
Heat Sanitize the line from your Brewkettle through your heat exchanger.
Recirculate wort through the heatexchanger back into the Brewkettle to bring the temperature down to 85 F (29.5 C). Try and minimize any splashing of wort.
Add your Lacto Prop to Brewkettle and blanket souring wort with CO2.
You will want to give your Lacto prop 24 hrs at 85 F (29.5 C) to drop the pH of your wort down to 3.3 - 3.5.

Tip : You will have to insulate your Brewkettle to maintain temperature for souring. You want your wort to be souring with a CO2 blanket to prevent any contact with oxygen which can create off flavors and aromatics.
Always take a sample of wort for pH during the souring phase with a sterile pipet. Sticking your pH meter directly into the souring vessel can introduce brewers yeast to the souring wort.
When your wort is in the 3.3 - 3.5 pH range we will prepare to boil your wort!

Bring Wort up to Boiling Temperature : (This will be a 30 min boil!)

Add Fermcap S (Anti-foam) .21 fluid oz. (6.2 ml)
When you have a good rolling boil collect a Kettle Full Gravity and pH.
Add Herkules Hop Pellets (30 min)[At Boil Start](.1 oz. / 2.8 g at 15.1% Alpha Acid)
At 10 min from Boil End add Crystal Hop Pellets (.6 oz. / 17 g at 5% Alpha Acid)
At 10 min from Boil End add Kettle Finings (Kick Carrageenan) Granulated : (.09 oz. / 2.6 g)

Note : At this point it is good to take another wort sample to see where you are with your gravity in case you might need to boost it with some liquid malt extract (LME) or dextrose. If you are running high you can make a hot liquor addition to bring your gravity down.

Tip : During your 30 min boil this is a great time to make sure that your fermentation vessel is cleaned and sanitized. Pitch your slurry of Wyeast 1968 London ESB Ale as close to your transfer of wort to the fermentation tank as possible. At Revolution for brewing Freedom we target a pitch rate of 1 mill cells / milliliter / Degree Plato! It is very helpful to have a healthy active yeast pitch going into fermentation and a yeast propagation before brewing this beer can be extremely beneficial! Also, this is where you want to add your 2nd addition of Fermcap S of (.17 fluid oz. / 5 ml) in right before cooling wort into the fermenter.

Whirlpool Program :

At Boil End :

No Whirlpool hop addition for Freedom.

Use a spoon or paddle to get your wort spinning.
Once you are done stirring your wort, start a 20 minute timer.
During this 20 min rest while you are allowing your trub pile to form heat sanitize your wort line from your Brewkettle / Whirlpool through your heat exchanger & aeration unit all the way to the fermentation tank if possible.
Take a sample of wort from your Brewkettle / Whirlpool (This is your O.G.) and record starting gravity and pH.

Wort Transfer :

After your 20 min rest begin cool-in of wort through your heat exchanger to the fermentation tank targeting 66 F (19 C).
If you have an oxygen tank and regulator we target our oxygen flow rate at 12 L / min during the entire transfer of wort to the fermentation tank. The higher rate of oxygen will be beneficial to the 1968 during fermentation in a low pH wort!
Transfer as much clean wort away from your trub pile as possible to maximize the volume you are sending to the fermentation tank.
Set the Fermentation tank to 68 F (20 C) if you have the capability to regulate temperature.
Set up a blowoff hose that is submerged in water with a splash of iodine to allow CO2 to vent during primary fermentation.

Fermentation :

Day 1-3 : Monitor fermentation temperature and gravity over the first 3 days trying to maintain as close to 68 F (20 C) as possible.

Day 4 : Dump thick yeast that has settled to the bottom of the fermenting vessel or rack to another carboy. This is also the time we want to raise the temperature to 70 F (21 C) to begin the diacetyl rest.

Note : We have noticed that the 1968 Ale yeast drops out very quickly and solid in our Freedom Kettle Sour once fermentation is complete.

Day 5-8 : Monitor fermentation temperature and gravity.

Day 8 : Monitor temperature, confirm that you have a stable T.G. (Terminal Gravity) and check for VDK to confirm no diacetyl is detected. (Heat Test will most likely apply for at home testing). Dump thick yeast / hops that have settled to the bottom of your fermenter or rack to another carboy. Set temperature to 32 F (0 C) to further drop yeast and hop matter.

Day 10 : Dump solid yeast. When you are at 32 F or as close to it as possible, add 1 fluid oz. (30 ml.) of Nalco (finings) and gently CO2 rouse your tank from the bottom (optimally if you have a conical tank) to ensure good mixing. After fining your beer it should take a few days to see a major improvement in clarity.

Day 12 : Dump thick yeast and transfer your clear beer to a cornelius keg that has been cleaned, sanitized and CO2 purged along with .16 fluid ounces / 5 ml of Peach Concentrate (60 Brix) and keep the temperature as or as close to 32 F (0 C) as possible. Gently CO2 rouse the vessel to make sure peach concentrate mixes evenly! Keep constant CO2 pressure on the headspace of the corny (8-10 psi) to gently force carbonate up to 2.5 - 2.6 volumes of CO2 for serving via draft!

Note : Here at Revolution Brewing we have a flash pasteurizer which we utilize when we produce kettle sours that we add high brix fruit concentrates to post fermentation before canning. Otherwise you can run the risk of secondary fermentation in the can and overpressurization of your package. This should remain a draft only product!
We have found that adding fruit to the primary or secondary fermentation tends to drive off a great deal of fruit aroma and flavor especially with a delicate fruit like peach.

Tips For Success :

The health and viability of your yeast strain is extremely important for the quality of your finished beer especially when it has to perform in a low pH environment such as Freedom wort. Removing yeast that has settled to the bottom of your fermentation tank is crucial so the yeast doesn't autolyze and you retain the clean fruity aromatics created during fermentation.

Keeping CO_2 pressure in the headspace of your beer when the fermentation is complete will help prevent oxidation.
With your lacto prop it is crucial to use unhopped wort for propagation. The OYL-605 - Lacto Blend is very hop sensitive. Try to maintain your prop at 85 F (30 C) to grow a healthy active lacto population that is ready to sour your wort.
During wort souring in the Brewkettle. If you have a lid with a spray ball that is a great place to hook up a CO_2 line for blanketing your wort.
Gently carbonating your beer to prevent foaming will also aid in your foam stability and let those delicate fruit aromatics you worked so hard to extract shine in your finished beer!
Once you get your process down and can produce a clean kettle soured beer the sky's the limit for fruit, spice or botanical additions. You can even produce hoppy versions of a kettle sour with generous dryhop quantities.

Cheers and Happy Brewing!!

Jim Cibak