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# Formulating a clone recipe!

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As homebrewers, we are always looking for new recipes. As a homebrew shop owner, my staff and I get many requests each week for recipes of local Portland/ Seattle area beers that are common, and people love. So over the last 18 years, we have written many recipes for customers to replicate their favorite local beer.

Initially my recipes were written more by "feel" than any basis in deep homebrewing knowledge. The fact was simple in 1992: there was very little homebrewing literature in magazine or book form to help us to understand the various components in beer. While there were a few books in print, none were geared toward recipe formulation.

So over the years, through experience, trial and error, and reading of magazines like *Brew Your Own, Brewing Techniques, and Zymurgy*, I learned more on how to formulate recipes. While I am writing this article on recipe formulation, I would like to throw out some cautionary advice. The recipes themselves do not make great beer, ***skilled brewers*** make great beer. This is no different than food recipes. Skilled cooks make great food, Skilled brewers make great beer! There are many variables that you cannot replicate to the beer you are trying to make. So brew the best you can, and adjust after tasting your beer. We all know that a typical homebrewers beer will get better with additional brewing experience. That being said, most of the beer we homebrewers make are intended to be of a particular style or flavor before we even start brewing, so that means some sort of recipe is required to get us in the general area of the beer we are trying to produce.

Today, we have many tools to use to produce recipes. Brewery web sites are a great starting point, along with comparing a variety of already published recipes on a beer style. Brewing software like Promash, Beer Tools, Beer Smith, and others make recipe formulation easier than ever. These software tools normally are excellent at calculating beginning wort specific gravities and estimated hop bitterness in the beer we are making. They also give you an estimated color, although that is less critical. These software programs cannot determine "taste", so there are limitations to them.

**Let's get started!**

Once you have decided what beer you want to brew, the first step in replicating a beer at home is to gather as much information about the beer in question. Today we are lucky that most breweries have web sites to promote their beer. Some web sites are more homebrewer friendly than others. The best ones for homebrewers not only give you the marketing descriptions that make you drool, but also give you some of the factual information to help you formulate the recipe.

If you can, talk directly to the brewer, this is the best source of information for you. Since virtually every commercial brewer started as homebrewers, they are often willing to talk to you about their beers, and are flattered that you like it so well you are interested in brewing a batch patterned after their beer. Having dinner and a few pints of beer at their pub in show of support for their business helps make them more interested in visiting with you and sharing information.

Primary information you are after is original and ending specific gravities (sometimes given in degrees Plato), hop IBU numbers, varieties and their usage, batch size, malt varieties that are used in the beer, and hopefully their ratio to the total amount of malt, and finally the suggested yeast variety to use from one of the homebrew yeast manufacturers. If you can get this information, you are in great shape.

Secondary information that helps to a lesser degree, is any unusual brewing methods that are used in brewing these beers, or additional ingredients used. It could be fermenting temperatures, fermenting times, additional lagering time, dry hopping, or a variety of other brewing techniques.

And of course, repeated evaluation of the beer in question helps you to pick out the flavors you love in the beer, and what you want to replicate.

**Let's create a 5 gallon (19 liter) recipe.**

5 gallons is the most common recipe size today, and the default volume for this article. In the Pacific Northwest, Rogue Brewery is a popular brewery. Lets use their popular Dead Guy Ale as an example of how to clone a beer. Rogue has a great web site that is useful for us to use in this article. http://www.rogue.com. Click on the "Dead Guy Ale" link for the information in this article.

Let's start with the malt. So here is the information that you have gathered on Dead Guy you want to make from the Rogue web site. The original gravity is 16 degree Plato (about 1.065), that the grain used is pale (Klages and Harrington), Munich and Carastan. It would be great if you knew roughly how much of each grain, but you do not. Not to worry. Virtually all beers use around 80% to 100% pale malt, with the remaining malts rounding out the grain bill. Using your brewing

software helps here. For Dead Guy let's use 90% pale grains, and the last 10% a combination of the other specialty malts. So populate your brewing software with these 3 malts. This gives you an all-grain recipe, which we then covert to extract if necessary.

If the software has a setting for type of brewing you do (all-grain, extract, or mini-mash) choose the setting that fits your brewing style. This is important, since this typically turns on the "extract efficiency" setting. This is a value between zero and 100, and means the percentage of sugars that you extract from the malted grains you are using. A typical value to start with is 65% for homebrewers, with most breweries getting around 80% or so, primarily because extract efficiency goes up with batch size. (65% is the value *Brew Your Own* magazine uses in its recipes.) This means the average homebrewer needs to use a bit more grain to get the same sugar extraction from the grain.

Adjust the amount of the pale grain to about 90% pale, with about 10% on the other 2 grains, and then check what your specific gravity calculates out to. You should be close to the 1.065 that you are targeting. Adjust up or down with the pale malt to get the gravity you want. A rough estimate is that you will get approximately 1.005 specific gravity points for each pound of grain in a 5 gallon batch. For a 1.065 original gravity, that comes out to 12.5 pounds of pale malt, 1 pound of Munich malt, and 0.5 pounds. of Carastan malt.

I chose 1 pound of Munich malt and 0.5 pounds of Carastan malt, since I wanted the maltiness of the Munich to be stronger than the caramel/toffee flavor of the Carastan malt. After brewing the beer and drinking your first batch, you may adjust based on your feedback on what the beer actually turned out to be.

The majority of homebrewers are "malt extract with grains" brewers that use liquid malt syrup and dry malt extract for the fermentable sugars, and then the specialty grains to add color and flavor to your beer. These brewers use light malt extracts in place of your pale grain, again plugging them in to the software replacing the pale grains, and changing the quantities until you get your estimated original gravity close to your target. Since extracts come in fixed quantities of 3.3 lb for malt syrup in most retail stores, it is not uncommon to need a combination of 2 cans of malt syrup and then 1 or 2 pounds of dry malt powder. Since it is easier to measure and store dry malt powder at home, dry malt is useful to hit the target gravity of your beer.

I suggest using "light" or "extra light" malt extracts in all beers you make, regardless of color. Avoid amber and dark extracts. The reason is simple. You are getting the color and flavor from the specialty grains you will have in the recipe. This more closely replicates what the brewer is doing. Amber and Dark extracts will use some specialty grains for additional color, but you will not know which specialty grain they used, and that gives you no control over the flavor.

So for our Dead Guy clone, I substitute 6.6 pounds of liquid malt syrup for the pale malt, and supplement it with 1 pound of light dry malt extract, to get to the 1.065 original gravity we want for this beer. Again, the brewing software works wonders here for you in calculating the original gravity.

**Move on to hops!**

From the Rogue web site, we know that they used Perle and Saaz hops, with an IBU level of 40. IBU's is the abbreviation for International Bittering Units, and is a calculation of hop bitterness in beer. For reference, hop bitterness levels start out in light American lagers around 8 to 10 IBU's, with IPA's around 40 IBU's. Check the various styles of beer in your software or brewing books for a reference chart of different beer IBU levels.

Let's use the Perle as the bittering hop, and Saaz as your finishing/aroma hop. Your software will ask for the alpha acid level on the hops you are using, and your hop package should give an indication of what an estimate of the alpha acids are in the package.
Insert your bittering hop into your software, and adjust the alpha acids. Then adjust the ounces and length of boiling time (60 minutes is most common) to hit your IBU target. In this recipe we will use the Saaz hop as our finishing or aroma hop, and use 1 ounce that is put in the beer at the very end of the boil. This addition of hops that does not get boiled does not add any hop bitterness that is measureable, but does add the hop aroma. The amount of aroma hops is up to you, the more you use the more aroma you should get. 0.5 ounce to 1.5 ounces is common. I settled on the middle ground of 1 ounce. Again, adjust accordingly in your recipes based on feedback from beer you have brewed, and your personal preferences. Remember, you want your beer to be better than the one you are cloning!!

Here is a little know fact about hop alphas acid levels. Each year the hop processors package hops in 200 lb bales. Then a random number of these bales are actually tested for hop bitterness. Then the numbers are averaged, and that entire group of 200 pound bales are sold at that alpha level. There can be a significant difference in alpha acids when you are using only 2 or 3 ounces out of a 200 lb bale. So a 2 ounce package that is labeled 5.0% alpha can up to 20% higher or lower than the number stated on the package in alpha acids. Hops also lose some of their alpha acids as they age. So while we have all of these numbers about hop bitterness, do not trust them too heavily.

Yeast can be a difficult ingredient to choose, as some breweries keep yeast choices a deep dark secret. Fortunately today, most brewers are less worried about the word getting out, so again, the brewery may give you a suggested yeast variety that is available to homebrewers from Wyeast, White Labs, or other yeast

companies. For this beer, Rogue tells you it is their Pacman yeast, which is currently packed for homebrewers by Wyeast, and distributed via Brewcraft. If you are unable to get any yeast information from the brewery, you will probably be best trying to match the beer style you are making with the flavor descriptions from your yeast manufacturer. Your local homebrew shop should also be able to give you some suggestions.

**Methodology**

Every brewer makes beer a little differently than everyone else. So if you are able to visit with the brewer, be sure to ask what they do differently to make this beer. Pay attention to fermentation temperatures, hopping techniques, etc. You may find new techniques that will improve not only this beer, but all of your beers!

Now you have to go and brew the beer. But this is only the first step, since you will likely taste your first effort, and decide you would like to alter the beer slightly the next time to improve the beer, and get it closer to the original beer you are trying to clone. You will likely need to repeat the recipe with minor alterations a few times before you settle on the recipe that you love.

**Rogue "Dead Guy" Ale Clone**

5 gallons (19 L), Extract with grains

OG 1.065 (16 plato)
FG 1.015 (4 plato)
IBU's= 40
Alcohol = 6.6 by volume

6.6 lbs (3 kg) Light malt extract syrup
1.0 lb. (0.45 kg) light dry malt extract.
1.0 lb. (0.45 kg) Munich 10L malt
0.5 lbs. (0.23 kg) Carastan malt
9 AAU Perle Hops (60 minutes)
(1.5 ounces (42g) 6.0% Alpha acids)
3 AAU Saaz hops (0 minutes)
(1.0 ounce (28g) 3.0% alpha acids)
1 teaspoon irish moss (boil 60 minutes)
Wyeast 1764 Pacman yeast (or Wyeast 1056 American Ale, White Labs WLP001 California Ale)
0.75 cup corn sugar for priming

Steep crushed malted grain in 2.5 gallons (9.5L) of 150° (66°C) water for 30 minutes. Remove the grain from the wort, then add the malt extracts and bring to a boil. Add Perle boiling hops and Irish Moss and boil for 60 minutes. Add Saaz

aroma hops at the end of the boil. Fill your sanitized carboy with 2 gallons (7.5L) of cold water. Strain the hot wort into the carboy and top off to the 5.5 gallon (21L) mark. Cool the beer to 75°, (24°C) aerate and pitch your yeast. Ferment at 70°.(21°C) Bottle with the corn sugar after fermentation is complete, and enjoy!

**All Grain version:**
This is a single step infusion mash. Substitute 12.5 lbs (5.6 kg) of pale malt for the malt extract syrup and powder. Mash the 14 lbs. (6.35 kg) of crushed grain at 152° (67° C) for 60 minutes. Collect approximately 7 gallons (26L) of wort, to boil 90 minutes according to the hop additions above, and collect approximately 5.5 gallons (21L) of wort.