The "No Mess, No Guess" Single Decoction Mash Technique

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Here's a technique I've been using for years to produce single decoction beers with little mess and is almost guarenteed to hit the temp rests. You'll need a 3-4 gallon pot that can fit in your oven, in addition to your typical mash tun. The idea is to split the grain bill into a main mash and a mini-mash. The mini-mash will be coverted, boiled and then added to the main mash to hit sacc temps.

For Example, let's say we're making a 5 gallon batch of Maibock and using 12 lbs of grain for ~1.062 SG target.

Take 1/3 of the malt (4 lbs) at room temp (~68F) and mix with 1.5 gallons water (1.5 qts/lb) water at 165F to hit 154F. Let it rest for 20-30 mins at this temp to covert and then cover the pot and stick it in your oven at 220F. This temp is high enough to boil the mash without any chance of actually scorching so stirring is optional. I typically let this cook for a couple of hours.

After you have your "decoction" in the oven happily boiling, you can prepare the main mash. Take the remaining malt (8 lbs at ~68F) and mix with 3 gallons water (1.5 qt/lb) at 129F to hit 122F (50C). Now take the mini-mash from the oven and add it to the main mash to boost the temp to 154F. Proceed to mash and sparge as normal. Sparging will be a bit slower because the mini-mash will have broken down a lot during boiling.

Now onto the math portion - since we have doughed in both mashes at the same malt-to-water ratio, figuring out the temp after mixing them is pretty easy:

((4 * 212F) + (8 * 122F)) / 12 = 152F

If we mix only 1/2 of the mini-mash in, we can hit the classic 140F/50C rest:

((2 * 212F) + (8 * 122F)) / 10 = 140F

then adding the remaining portion will get us to sacc temps:

((2 * 212F) + (10 * 140F)) / 12 = 152F

You can adjust the malt-to-liquor ratio and everything still works fine so long as it's the same for both mashes. I typically use 2 qts per lb and have never had any issue with lack of enzymes. The

math gets more complicated when you start varying the liquor ratios between mashes, but it is still not difficult. That is left as an exercise for the reader.

These calculations do not take into account the thermal mass of your mash tun. A couple of extra quarts of boiling water help to adjust the final temps as needed.

The advantages here are the things are pre-measured while cool and you don't have to muck around with scooping sticky hot mash and potential burns. Be careful to slowly scoop the mini-mash into the main mash, I have been splashed with hot mash by dumping the entire mini-mash directly into the main mash.

Hopefully this removes some of the fear of trying a decoction mash.

Mashing formulas

ancient post on this subject