

The Mashout Step. What is it? Is it really necessary? Is it still relevant?

Most all grain homebrewers have heard the dogma over the years that after conclusion of the 60-minute mash (148-154f) that you must turn the heat on and ramp up the temperature to 170f and hold for 15 minutes.

What are the purported benefits of this? We were told that in order to denature the enzymes found in today's highly modified grain as well as thin out the sweet wort in order to maximize the extraction of the available sugars.

For well over 20 years, I took this as gospel. So much so that I, too, was urging anyone who would listen that they should also follow suit or else risk producing a less than desirable beer. A beer that could have been, well, better.

But why? Does the mashout step actually contribute to efficiency? Does it really denature the enzymes?

Does your chosen finishing mash technique have any bearing on whether you need to employ the mashout step? Does a homebrewer who uses either a batch or fly sparge or the full volume/no sparge method tip the scales one way or another on the application of the mashout step?

One thing to consider is the modern maltsters process is light years of the maltsters of even 5 years ago. The malt that they process is so highly modified or "hot" in brewing parlance is that complete conversion is all but guaranteed. Each grain is so skillfully processed that they are bursting with conversion enzymes and easily converted long and short chain starches. This is why we have all heard the phrase "grain just wants to be beer"

And rightly so.... Most fully convert in the mash within the first 20 minutes. Mashing longer literally yields negligible efficiency gains. The only reason I mash longer than 20 minutes is that it allows me time to clean as I go.

How about dogma that the mashout step denatures the enzymes in the mash effectively stopping the conversion process? Well, consider the single, double and triple decocted lagers so beloved in Europe and the rest of the world alike? The process actually calls for a large portion of the thick mash to be moved to a separate vessel and boiled 1, 2 or 3 separate times 15-30 minutes per decoction and then reincorporated back into the mash?

One would conclude that this decoction boil step simply must "denature" the enzymes over and over effectively rendering the grain incapable of converting the starches into the sweet wort we desire.

But wait, it doesn't. Boiling the thick mash as part of the decoction process actually yields higher efficiency even if by a small margin. Why is this?

I know what you are thinking, the higher efficiency is due to an increased boil off rate. This line of thinking is flawed. Why?

When you set up a recipe to be decocted, the increase in boil off rate is taken into account by the brewing software of your choosing and it increases the strike water amount to compensate.

So, given that decoction yields better efficiency than a simple infusion mash tells us empirically that a mashout step in no way can denature the enzymes at 170f. The reason is that the temperature is considerably lower than the 212f boil temps that grain mash is subjected to during a decoction schedule.

Anecdotally, I have a great number of house lager recipes that I brewed where one features a mashout step, the other did not. In a side by side comparison, I could not tell a taste or color difference. Additionally, the OG, FG, ABV etc were all identical time and time again.

I stopped employing a mashout step when brewing any of my lagers and ales long ago, it just seemed like a waste of time with no benefit.

Mash out Breakdown

Pros

Gets a head start on the temp of the sweet wort to get closer to the boil phase number

Great for those looking to needlessly extend their brew day

Can give you the warm and fuzzy feeling only provided by doing things "the right way"

Provides a 20+ minute window to drink more homebrew

Cons

Just does not do as reported. Denaturing simply doesn't occur. Hop creep is just one example that proves that

I am not getting any younger, adds unnecessary time to an already long brew day

Less time to drink homebrew while brewing

