

Jovial Monk Brew Manual—Part 2

Chapter 5

Cereal and decoction mashes

These are supplementary mashes, usually used with a full mash, but could be used with a 3–4Kg partmash quite easily. In fact, you will see a “Viennese decoction” that could be used with a 1Kg part mash!

Cereal Mashes

These are usually done to gelatinise a non–pregelatinised adjunct. Pregelatinised? Adjuncts? Adjuncts are unmalted grains added to the mash to add flavor, mouthfeel, head retention or other reason. Flaked or puffed adjuncts are pregelatinised and can be added directly to the mash tun, for the others, read on!

Adjuncts

A starchy adjunct that has not been flaked or puffed (torrefied in brewerspeak) has its starch chains rolled up, with few ends for the amylase enzymes to work on. They would therefore not convert very much in the mash. Flaked and puffed adjuncts (flaked barley, torrefied wheat etc) have had these starch chains straightened out (by the grains being wetted then heated) and so can go straight into the mashtun.

The grain that most likely will need a cereal mash is corn (flaked and torrefied barley, wheat, rye, oats and rice are easily obtained from the Jovial Monk or your nearest wholefood or health food outlet.) In the absence of flaked maize the only way to use corn in your mash is in the form of polenta, and polenta being neither flaked nor torrefied is not pregelatinised.

Doing a cereal mash

We need pale malt, preferably lager (pilsener) malt as this has the most enzymes. Use twice as much malt as adjunct by weight plus three times as much water (mash liquor) as the combined weight of malt and adjunct. Place all this in a pan—preferably one with a thick bottom or copper sandwich base to guard against scorching—that can hold the whole cereal mash comfortably. Place this over low–medium heat and, stirring all the time heat the mash to about 66°C, the saccharification rest, then cover the pan, turn the heat off and insulate the pan with towels etc. Let the mash rest at the saccharification temperature for 15 to 20 minutes.

During this rest the amylase enzymes attack what starch they can, revealing more starch for further attack. After the rest is finished uncover the pan, put low–medium heat back on, and, remembering to stir the mash all the time, bring the mash to a boil and boil it for 10–15 minutes, then add it back to the main mash and stir it in. The boil has gelatinised the starch in the adjunct. If you are using rice a longer boil is needed, rice being difficult to gelatinise—far better to use flaked rice or minute rice which is precooked.

There is one other reason for using a cereal mash—to degrade betaglucans (gums) in cereals that have them in abundance. Oats and rye, both wonderful grains and better flavored in the unmalted form have abundant betaglucans that can slow the sparge to a tiny trickle!

So, you want to add 750g rolled oats or flaked rye or a combination of oats and rye? You might find the sparge of that mash to be a long drawn out affair! Betaglucans, gums, will stick the sparge!

Doing a cereal mash to reduce betaglucans

So, we make place the malt, adjunct and water in our thick-bottomed pan as described above, then heat this to 32°C, the betaglucanase rest. The betaglucanase enzymes get to work degrading and breaking down the betaglucans. I do this even with malted oats and rye—the malting leaves the betaglucanase content intact! Leave your mash at 32°C for at least 15 minutes, or 30 minutes or even more where really significant amounts of rye or oats are being added. Those of you who have brewed our “Adelaide Oatmalt Stout” Pack now know why I instructed you to heat to 32°C and rest it there!

After this rest you could add the cereal mash to the main mash if no gelatinisation is needed. However, I usually heat the mash to 66°C, rest it for 10–15 minutes then boil it. The boil, a decoction of some sort (see below,) increases the flavor of the final beer! It will also darken the beer a little bit. I believe that with oats the boil will destroy some of the fats that that grain also has.

Now, some people have direct heated mash tuns and they could take their whole mash through the betaglucanase (and protein) rest. However, it is more work and uses lots more propane and time to heat a whole mash rather than than a small cereal mash.

Decoction mashes

Decoctions were necessary with poorly modified malts in Europe and are not really necessary these days except for wheat beers but they do add flavor and increase mash efficiency, i.e. you get more gravity for the same weight of grain. On the downside, doing a decoction mash can really lengthen the brewday.

Decoctions are a way of doing a step mash, where the mash is held at various temperature rests on the way to the saccharification rest (where the starch in the grains is converted to sugars) by taking out some grain, boiling it and adding the grains back to the main mash to raise the mash temperature.

Doing a decoction mash

To do the decoction mash, we mash in at protein rest temperatures of 45–55°C, then 1/3 of “the thick part of the mash” (i.e. the grains not the wort) is taken out, heated to 66°C or so and held there for 15–20 minutes. The decoction is then boiled for 10–20 minutes and stirred back into the main mash, raising that to the sach. temperature. Note how similar this is to a cereal mash and was for the same purpose, to gelatinise the starch in poorly modified malt.

Another 1/3 can be taken out at the end of the mash, boiled for 10 minutes and added back to the main mash to raise it to mash out temperature of 78°C before beginning the sparge. Those of you who have brewed the “Adelaide Original Pilsener” Pack now know why I suggested you boil the whole mash before you started sparging!

There are schedules where three decoctions are pulled, but two are quite enough work, for me anyway!

Now, when would you do a decoction mash? With wheat beers where we need the protein rest to break down the huge proteins present in the wheat—these big proteins can cause problems, we only want the smaller proteins. Eric Warner in “Wheat Beers” in the Classic Beer Styles Series, Brewers Publications, argues for the need for three decoctions with wheat beers—I leave it to you to work out your decoction schedules.

As boiling decoctions increase color, melanoidins and create some caramel and add to the grainy/bready/malty flavors you can also use a decoction mash in beers where malt plays the biggest part in beer flavor. Pilseners are a beer style where decoctions are pretty much required and turn what would be an uninteresting straw coloured beer into a more flavorsome golden colored beer.

Some warnings

First, boiling a decoction will denature the enzymes present in the grains being boiled. So we can pull too many decoctions and have no enzymes to finish our mash! Most enzymes are in the liquid part not the grains, that is why we boil the grains not the wort!

Secondly, use a pan with a nice thick bottom, preferably with a copper or aluminium sandwich base, and stir continuously while heating or boiling the decoction—we do not want grain to scorch!

Thirdly, remember that decoctions will really lengthen your brewday, they should not be done where a 'quicky brew&' is wanted! Really!

Fourthly, the decoction to mash out will release some unconverted starch out the grain, so hold the mash at the 78°C temperature for 10 minutes before beginning the sparge.

Viennese decoction

Whether this really originates from Vienna or not I don't really know. It is a handy way to raise the mash to sparge out temperature especially where you have done an overnight mash (see next chapter.) Simply run out all the wort then boil it for 10–15 minutes before adding it back to the mash and stirring it in. Some melanoidin formation and caramelisation occurs.