

ASTRINGENCY by Mike Retzlaff

Some time back, Aaron at Brewstock was running occasional brewing contests. I decided to enter the one for dark beer. It could be any style of beer as long as it was dark. I was more interested in getting an honest appraisal of the beer than anything else. My friends always seem to love my beer but I think that they love the “free” part best. Getting an honest and informed appraisal from them is tough.

After the contest, I got the score sheet for my pseudo Murphy Stout. The sheet listed a flaw - astringency. The judge had suggested: “mashed too long?, over sparged?” I went back to my brew sheet and found that I had only mashed for an hour so I conceded to myself that the problem must have come from over sparging. I knew I had a little problem with astringency in some beers but it wasn't noticeable in others. Color didn't seem to be a factor with this occasional flaw as these beers were all over the map as far as style. The problem would come up from time to time and I had no idea when it would happen. I seemed to be at the mercy of some mystical force.

I checked the books to learn how to keep those pesky tannins out of my beer. Some texts said to stop collecting wort during the lauter at a SG of 1.008. Others said 1.010 or 1.012. That's really a fairly wide spread. What are the measurement parameters for this? Are these cut-off gravities based on OG? Are they based on color? Is this just a matter of hocus pocus and “feel”, or is it based on some scientific principle? I put this problem on my “things to figure out” list.

For a few batches, I started checking the SG toward the end of the lauter and stopped collecting at the suggested gravity. I still wondered why the tannins don't leach out during the entire lauter. I found my answer in reading more technical publications. They seemed to lay it out in a way my puny brain could understand although I would have expected this explanation from basic brewing texts. As the sugars are being rinsed from the mash, so are the buffers which keep the pH down in the 5.1 to 5.5 range. As the sparge water, with a higher pH, rinses these buffers out, the pH of the grain bed starts to rise. Once the grain bed rises to

about pH 5.9, the tannins start to leach out of the hulls. The pH of the mash will continue to rise and eventually would match the pH of your sparge water, if you were to lauter that long. Raising the temp of the grain bed by using sparge water over 172 degrees just exacerbates the problem.

I read that many brewers acidify their sparge water to alleviate this condition. Sulfuric, lactic, and phosphoric acids were mentioned. I really didn't have a clue as to which kind or even how much to use but this mystery seemed to be unravelling. I found John Palmer's RA worksheet on the web and downloaded it. One part of this worksheet is a calculator for acidifying the sparge water. I used lactic acid in the amount set by the calculator on my next batch of beer. Toward the end of the collection, I checked gravity as well as pH which stayed low so I collected until I had enough for the boil. Neither the collected wort nor the finished beer had any perceivable astringency. I tried it again on subsequent batches and still found no astringency.

The gravity of the final runnings seems to be of lesser concern if that wort doesn't climb above pH 5.8. Keep this in mind if you are making a double batch from a single mash such as a Wee Heavy and a small beer or a DIPA and a bitter. However, there is nothing to gain by rinsing the grain bed until there is zero sugar left!

The mystical force of “hocus pocus” has now been replaced by honest-to-goodness science. It has provided me with a technique which seems to have corrected the problem and is keeping astringency at bay in my brewing.