

Tech Corner

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By Ken Woodson

Last month we gave a brief introduction of the history of the Trappist Monasteries and the beers they brew. In this article we discuss the Trappist brewing techniques.

So, how do the the Trappist monks make great beer?

Basically, the answer to this question is: innovation, tradition and technology. Belgium brewers are very innovative when it comes to developing new beer styles and creating great beers. The Trappist monks are no exception. In 1934, the monks at Westmalle released the first Trappist Tripel. Their Tripel may not have been the first of its kind, but it certainly was one of the first.

By tradition, we mean that the monks do not change their beer recipes very often. As an example, the Westmalle Tripel recipe has changed very little since the 1950s.

And finally, the monks continually improve their brewing process and equipment. When I visited Orval in September and toured their brewery, the brewhouse was state of the art from the modern brew kettles to the cylindro-conical fermentation vessels.

If we review the beer ingredients and brewing process at the Trappist monasteries, there are common themes. For example, they typically:

- use spring or well water that is suited for brewing or they treat their water
- have simple grain bills
- use liquid candi sugar as an adjunct
- use a step mash
- use yeast that can survive high alcohol levels and ferment at higher temperatures
- bottle condition their beer

The monks are very secretive about their brewing water. This secrecy speaks volumes about the importance the Trappist monks place on brew water chemistry. The water at many Trappist breweries is high in bicarbonates and is treated with food grade acid. At Westvleteren, the water is not suited for brewing because it contains high levels of bicarbonate, sodium, sulfate and chloride. Undoubtedly, the monks at Westvleteren remove a portion of the minerals in their water and add back certain mineral salts.

Most Trappist beer recipes are very simple. For example, the Westmalle Tripel is basically Pilsener malt, candi sugar and hops like Tettnanger, Spalt Select, or Saaz.

The brewing chemist Jean De Clerck influenced many Belgium brewers including the Trappist. He recommended a step mash procedure with four temperature steps

- A protein rest
- A saccharification rest that promotes higher attenuation

- A saccharification rest that favors dextrin formation
- And a final mash out temperature

As an example, at Achel they use the following step mash temperatures 118-144-162-174 ° F. Note that the protein rest works best with under modified malts.

The monks typically do not add spice to their beer; however, there are exceptions, like Rochefort 10 which contains coriander. In place of spices, the Trappist monks rely on yeast to produce phenols and esters that add spice characteristics and fruity notes. They achieve these characteristics through fermentation temperature control. The monks usually start the fermentation at lower temperature levels and allow the temperature to rise as the fermentation continues. At Chimay for example, they start the fermentation at 68 ° F and allow it increase to around 81 ° F.

All the Trappist breweries bottle condition their beer. That is, they add sugar and fresh yeast just before bottling. The bottle conditioning allows for better attenuation and proper levels of CO₂ in the bottle.

If you would like to read more about Trappist brewing techniques, here is a good resource:

Brew Like a Monk, by Stan Hieronymus