NOVEMBER 2017

HOP SCIENCE

KNOWLEDGE FOR YOUR SUCCESS

by Dr. Christina Schoenberger, christina.schoenberger@johbarth.de

HAAS

THE BITTER, TWISTED TRUTH OF THE HOP: 50 YEARS OF HOP CHEMISTRY

These two very well known authors, Patrick Ting and David Ryder, guide us through a history of hop chemistry. They reveal the "bitter, twisted truth of the hop", detailing the discovery of hop acids and their transformation to the many innovations that led to the development of advanced hop products essential to the success of many new and novel beer brands of consistent quality. Miller Brewing has played an important role in these achievements, and although today's zeitgeist goes in the direction of using minimally processed foods and spices, it is clear that, thanks to advanced technologies the brewing production process, we are in the position to create more possibilities for consistency, efficiency, and flexibility in terms of bittering and foam quality.[1]

THE HAPPY HOPPY ODYSSEY OF DENIS DE KEUKELEIRE

In our close community of brewing and hop researchers worldwide, we're familiar with the field of work which most of us are involved, but it's not often enough we find time to get to know our colleagues even better and have our motivations revealed that have brought us into the amazing field of beer and hops. Denis tells us his story; how he grew up, how he found hops...leading to his significant contributions in hops and beer chemistry. It is a great story with a happy ending – please read it! A Biographical Review.[2]

DRY HOP BITTERNESS COMPOSITION

Why is the bitterness of dry hopped beers so different? This question has been heavily investigated in recent years. We learned that the humulinones are largely responsible for a part of the bitterness in beer and we also learned that the content of iso-alpha acids slightly decreases with dry hopping – exactly why is not known. Also unclear so far is the role of polyphenols. This study from Oregon State University shows conclusively that both the polyphenols and humulinones contribute to the sensory and the IBU bitterness of dry hopped beer. How can we translate this knowledge in an easy bitterness determination analysis?[3]

PICK YOUR HOPS BEFORE THE ONION TAKES OVER!

Sulfur components in hops have many different faces. Though we love them for bringing us flavors such as rhubarb, passion fruit, grapefruit and black currant flavours, they also surprise us with nasty flavours such as onion-like, garlic-like or just cheesy. By name, these are known as S-methyl-thioisobutyrate, S-methyl-thio-2-methylbutyrate, S-methyl-thioisovalerate, S-methyl-thio-4-methylpentanoate, and S-methyl-thiohexanoate. One parameter that significantly influences the formation of these compounds is the harvest time of the hops. This article shows how the concentration of the onion/garlic compounds increases during harvest time for varieties as Cascade, Mandarina Bavaria, Polaris, Hallertau Blanc and Hüll Melon. Although many studies have shown that a later harvest brings a more overall flavourful aroma profile for some varieties, e.g. Hallertau Mittelfrüh (and I put here my hypothesis that this includes many varieties that express intense fruitiness such as Citra, Mosaic, Cascade, etc.), the harvest date should be chosen carefully.[4]

REFERENCES:

1. Ting, P.: The Bitter, Twisted Truth of the Hop: 50 Years of Hop Chemistry, J. Am. Soc. Brew. Chem. 75(3):161-180, 2017. https://www.asbcnet.org/publications/journal/vol/2017/Pages/ASBCJ-2017-3638-01.aspx

2. De Keuekeleire, D.: A Happy, Hoppy Odyssey: From a Flavorsome Hobby to a Dream Job, J. Am. Soc. Brew. Chem. 75(4):283-301, 2017. https://www.asbcnet.org/publications/journal/vol/2017/Pages/ASBCJ-2017-4795-01.aspx

3. Brew. Chem. 75(4):363-368, 2017. https://www.asbcnet.org/publications/journal/vol/2017/Pages/ASBCJ-2017-4311-01.aspx

4. Kammhuber, K.: Influence of the Date of Harvest on the Sulphur Compounds of the Special Flavour Hop Varieties Cascade, Mandarina Bavaria, Hallertau Blanc, Huell Melon and Polaris. http://www.brewingscience.de/index.php?tpl=table_of_contents&year=2017&edition=0009%2F0010&article=90346